

## D3 | Food

Undernutrition is by far the most important single cause of illness and death globally, accounting for 12% of all deaths and 16% of disability-adjusted life years lost. Low weight for age is associated with more than half of all deaths in young children, accounting for more than six million children a year (Pelletier et al. 1995). Babies who survive the early disadvantages of low birth weight are far more likely to develop obesity, diabetes and hypertension in adulthood. The costs of undernutrition in terms of lost development and productivity are enormous. Even mild to moderate undernutrition in the womb reduces future cognitive development. Thus nutrition plays a crucial role in the reproduction of poverty from one generation to the next, and must be tackled to meet the Millennium Development Goals (Box D3.1).

The number of people suffering from food insecurity and hunger is grow-

### *Box D3.1 How nutrition underpins the Millennium Development Goals*

*Goal 1: Eradicate extreme poverty and hunger* Malnutrition erodes human capital, reduces resilience to shocks and reduces productivity (impaired physical and mental capacity).

*Goal 2: Achieve universal primary education* Malnutrition reduces mental capacity and school performance. Malnourished children are less likely to enrol in school, and more likely to enrol later.

*Goal 3: Promote gender equality and empower women* Better-nourished girls are more likely to stay in school and to have more control over future choices.

*Goal 4: Reduce child mortality* Malnutrition is directly or indirectly associated with more than half of all child mortality.

*Goal 5: Improve maternal health* Malnutrition, in particular iron deficiency and vitamin A deficiency, increases the risk of maternal mortality.

*Goal 6: Combat HIV/AIDS, TB, malaria, and other diseases* Malnutrition hastens the onset of AIDS among HIV-positive people, and generally increases susceptibility to infectious diseases.

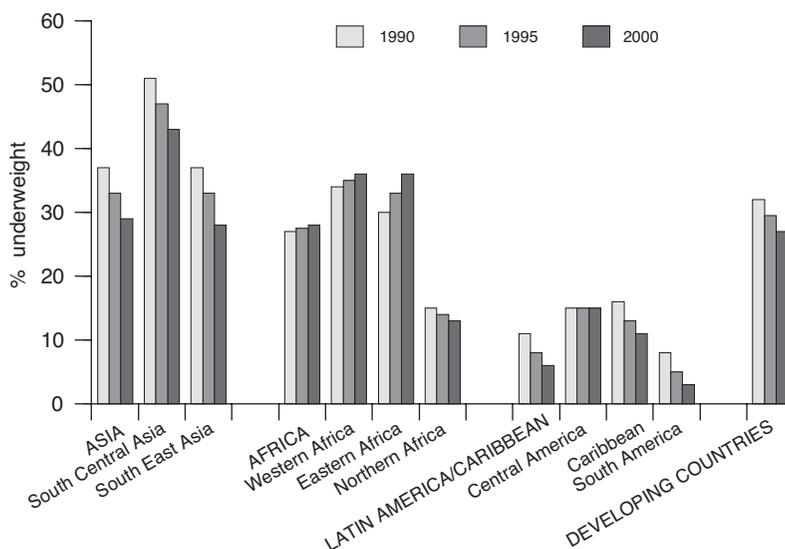
(Source: SCN 2004)

ing – even though food production has doubled in the past 40 years, as has production per head, while food prices are at an all-time low. This chapter aims to explain why malnutrition exists in so many regions and countries when there is enough food; why hunger and food insecurity have grown in spite of declining food prices; why the distribution of available food is heavily skewed toward the rich; and how the increased concentration of power in the hands of a small number of vast corporations has resulted in the accumulation of huge profits on the one hand and chronic food insecurity for millions of people on the other.

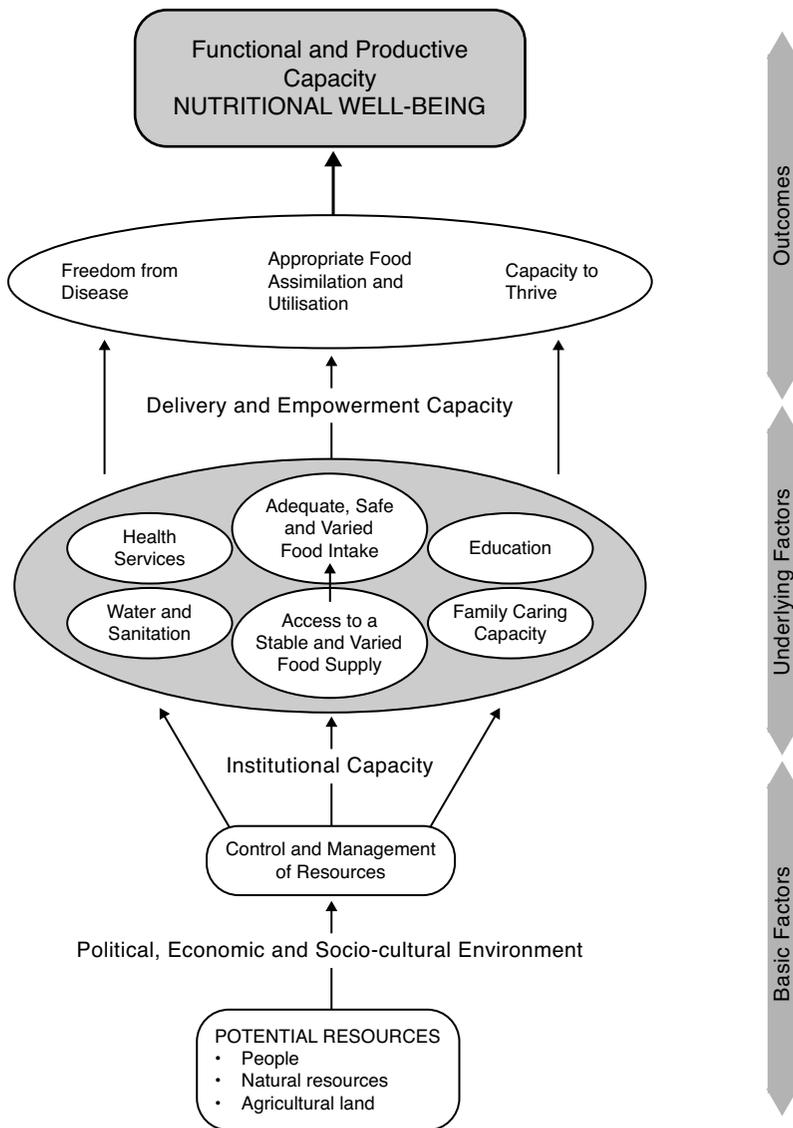
### Figures, trends and causes

Every day 799 million people in developing countries – about 18% of the world’s population – go hungry. In South Asia one person in four goes hungry, and in Sub-Saharan Africa the share is as high as one in three. There were reductions in the number of chronically hungry people in the first half of the 1990s, but the number increased by over 18 million between 1995 and 1997 (Food and Agricultural Organization 2003).

The situation regarding the proportion and numbers of people who are undernourished is even bleaker. The number of undernourished people actually increased by 4.5 million a year in the late 1990s. Twenty-six countries, most already with a large proportion of their population undernourished,



**Figure D3.1 Trends in child malnutrition in developing countries, 1990–2000 (Source: SCN 2004)**



**Figure D3.2 Determinants of nutritional well-being**  
(Source: UNICEF 1994)

experienced increases: between 1992 and 2000, the number of hungry people went up by almost 60 million (Food and Agricultural Organization 2003). Only three of the 10 African countries with maternal nutrition data showed a decline in the last decade in the prevalence of severe maternal undernutrition (defined as a body mass index of less than 16) (Standing Committee on Nutrition 2004).

Around 175 million children under five are estimated to be underweight, a

third of preschool children are stunted, 16% of newborn babies weigh less than 2.5 kg, and 243 million adults are severely malnourished. Two billion women and children are anaemic (James et al. 2001), 250 million children suffer from vitamin A deficiency and two billion people are at risk from iodine deficiency (Micronutrient Initiative 1998). The proportion and absolute number of malnourished children has increased in Sub-Saharan Africa (see Figure D3.1).

Malnutrition has different levels of causation, as indicated by UNICEF's conceptual model. This illustrates not only immediate biological causes such as illness and inadequate food and nutrients, but also what underlies them, such as price, availability, and economic and political factors (UNICEF 1994) (Figure D3.2). It is strongly linked with poverty: poor children are more likely to be underweight at birth (Gillespie et al. 2003) and less likely to receive energy-rich complementary food (Brown et al. 1998) and iodized salt (UNICEF 1998). At least they are more likely to be breastfed, and for longer, in poorer countries (Butz et al. 1984), although HIV is now eroding this advantage. Poorer children live in environments that predispose them to illness and death (Esrey 1996), are less likely to live in households with safe water or sanitation (Hutty et al. 1997) and more likely to be exposed to indoor air pollution from coal and biomass fuel such as wood or animal dung used for cooking and heating, coupled with inadequate ventilation (Bruce et al. 2000).

### **The food production and supply system**

The global value of trading in food grew from US\$ 224 billion in 1972 to US\$ 438 billion in 1998. The globalization of food systems is nothing new, but the current pace and scale of change are unprecedented. Food now constitutes 11% of global trade in terms of value, a higher percentage than fuel (Pinstrup-Andersen and Babinard 2001). This increase has been accompanied throughout the food chain by the consolidation of agricultural and food companies into large transnational corporations, whose growth has allowed them astounding control in key sectors such as meat, cereal, processing and retail (Table D3.1). In 1994, 50% of US farm products came from 2% of the farms (Lehman and Krebs 1996). In the agrochemical sector ten companies control 81% of the US\$ 29 billion global market. This dominance is increasing with the aggressive marketing of genetically modified seeds (Box D3.2).

The corporations have developed global brand names and global marketing strategies, albeit adapted to local tastes. They are defined by the global sourcing of their supplies; the centralization of strategic assets, resources and decision-making; and the maintenance of operations in several countries to serve a more unified global market. The rise of the meat industry exemplifies

TABLE D3.1 Corporate control of US food sectors

Sector	Concentration ratio (%)	Companies involved
Beef packers	81	Tyson (IBP), ConAgra Beef Cos, Cargill (Excel), Farmland National Beef Pkg Co
Pork packers	59	Smithfield, Tyson (IBP), ConAgra (Swift), Cargill (Excel)
Pork production	46	Smithfield Foods, Premium Standard Farms (ContiGroup), Seaboard Corp, Triumph Pork Group (Farmland Managed)
Broilers	50	Tyson Foods, Gold Kist, Pilgrim's Pride, ConAgra
Turkeys	45	Hormel (Jennie-O Turkeys), Butterball (ConAgra), Cargill's Turkeys, Pilgrim's Pride
Animal feed plants	25	Land O'Lakes Farmland Feed LLC Purina Mills, Cargill Animal Nutrition (Nutrena), ADM (Moorman's), JD, Heiskell & Co
Terminal grain handling facilities	60	Cargill, Cenex Harvest States, ADM, General Mills
Corn exports	81	Cargill-Continental Grain, ADM, Zen Noh
Soybean exports	65	Cargill-Continental Grain, ADM, Zen Noh
Flour milling	61	ADM Milling, ConAgra, Cargill, General Mills
Soybean crushing	80	ADM, Cargill, Bunge, AGP
Ethanol production	49	ADM, Minnesota Corn Producers (ADM has 50% equity stake), Williams Energy Services, Cargill
Dairy processors	n/a	Dean Foods (Suiza Foods Corp), Kraft Foods (Philip Morris), Dairy Farmers of America, Land O'Lakes
Food retailing	38	Kroger, Albertson's, Safeway, Wal-Mart, Ahold

Source: Lang 1999

many of the processes at play in the new food system. Meat production has increased five-fold over the last 50 years and has doubled since 1997, facilitated by a massive increase in the production of animal feeds. Since the early 1960s, livestock has increased from three billion to more than five billion, and fowl from four billion to 16 billion. Producing meat requires large amounts of grain, and most of the corn and soya beans harvested worldwide are used to fatten livestock.

A globalized sector has emerged, with global sourcing of feed inputs and global marketing of meat-related commodities. Sanderson (1986) used the

*Box D3.2 Genetic engineering and nutrition*

The claim that this technology will lead to the development of highly nutritious cereals that could contribute to the fight against malnutrition is an important justification for the investment in genetically engineered seeds and crops. However, miracles like 'golden rice' and 'protein potatoes' will not solve the problem of vitamin A deficiency and protein malnutrition.

Golden rice is a genetically engineered rice which is supposed to produce 30µg/100gm of beta carotene, or vitamin A, after development. The levels of beta carotene are actually much lower, while farmers' varieties such as Himalayan red rice have much higher levels of vitamin A. Food crops and edible plants such as amaranth leaves, coriander leaves and curry leaves have 1000 – 1400 µg of vitamin A, 70 times more than 'golden rice'. Golden rice will thus reduce vitamin A availability and hence increase vitamin A deficiency and blindness.

While not producing more nutrition, genetic engineering creates new public health risks. Its promoters say it is no different from conventional breeding, and hence poses no new health or ecological risks – but conventional breeding does not transfer genes from bacteria and animals to plants. It does not put fish genes into potatoes or scorpion genes into cabbage. It does not put antibiotic resistance markers and viral promoters in plants. These pose new public health risks.

We are in danger of creating a food and health system in which biodiversity and biotechnology are owned and controlled by one or two gene giants who deny citizens freedom to choose independent science, and enclose the 'commons' of biodiversity and knowledge through patents and intellectual property rights. In South Africa, for example, Monsanto completely controls the national market for genetically modified seed, 60% of the hybrid maize market and 90% of the wheat market. Three companies (Cargill, Pioneer and CP-DeKalb) control almost 70% of the Asian seed market, supplying hybrid seed for 25% of the total corn area. Four corporations now own nearly 45% of all patents for staple crops such as rice, maize, wheat and potatoes. (*Source: Shiva 2004*)

term 'world steer' to capture the global production of beef: 'Regardless of nationality of ownership, the world steer reorganizes beef production to meet international standards through expensive feeds and medicines, concentrated feedlots and centralized slaughtering. The displacement of traditional mar-

keting and processing means that small sideline producers lose access to markets...As a result they lose milk and meat.'

The system is a web of contractual relationships turning the farmer into a contractor, who provides the labour and often some capital but never owns the product as it moves through the supply chain. Fewer and fewer households can subsist on herding, fishing or forestry. Every other hungry person is living in a farm household, on marginal lands where environmental degradation and exclusion threaten agricultural production. Poor fishers are seeing their catches reduced by commercial fishing, and foresters are losing their rights as logging companies move in under government concessions. The average land holding per head among rural farmers in developing countries declined from 3.6 hectares in 1972 to 0.26 hectares in 1992 – and continues to fall. If the poor are to benefit from the livestock revolution they must forsake mixed farming and become contract farmers for food corporations, in precarious dependence on distant markets and prices (McMichael 2001).

### **A right or a commodity?**

Food not only fulfils a fundamental need but also has great symbolic and social value. Legitimization of the erosion of control of such an important commodity by communities and nations has required the hijacking and redefinition of basic terms such as development and food security. More specifically the idea of food security has been reconstructed as a global market function based on the presence of a free market and governed by corporate rather than social criteria. This position was boldly stated by a senior US official at the 1986 Uruguay Round, which laid the foundations of the WTO Agreement on Agriculture: 'The idea that developing countries should feed themselves is an anachronism from a bygone era. They could better ensure their food security by relying on US agricultural products, which are available in most cases at much lower cost' (quoted in Bello 2000).

The North American Free Trade Agreement between the US, Canada and Mexico is an early example of this new model (discussed in more detail in Part A). The overproduction of food supported by massive subsidies in the US and Europe in particular has led to the 'dumping' of food on developing countries. US subsidies result in major crops being put on the international market at well below their production costs: wheat by an average of 43% below cost of production; rice 35%; soya beans 25%; and cotton 61% (Institute for Agriculture and Trade Policy 2004). This depression of commodity prices has a devastating effect on farmers in developing countries. Subsidies to farming in the OECD countries, which totalled US\$ 311 billion in 2001 (US\$ 850 million



**17 Market, Ethiopia. Third World producers are under threat from heavily-subsidized EU and US farmers.**

a day) displace farming in the developing countries, costing the world's poor countries about US\$ 24 billion a year in lost agricultural and agroindustrial income (International Food Policy Research Institute 2004).

There has also been a decline in agricultural and rural investment in many developing countries, resulting in falling agricultural productivity. Only about 4.2% of land under cultivation in Africa is irrigated; fertilizer application is 15% lower today than in 1980; the number of tractors per worker is 25% lower than in 1980 and the lowest in the world (World Bank 2002). Agricultural productivity per worker has fallen by about 12% since the early 1980s, while yields have been level or falling for many crops in many countries. Cereal yields average 1120 kg per hectare, compared with 2067 kg per hectare for the world as a whole. Yields of the most important staple food grains, tubers and legumes (maize, millet, sorghum, yams, cassava, groundnuts) in most African countries are no higher today than in 1980. Africa's share of world agricultural trade fell from 8% in 1965 to 3% in 1996 (Stevens and Kennan 2001).

The story is similar in nearly all developing countries. For example, the

average Indian family of four reduced consumption of foodgrains by 76 kg between 1998 and 2003 – to levels last seen just after Independence (Patnaik 2004). This dramatic fall can be traced to the collapse in rural employment and incomes resulting from liberalization of the agricultural sector.

The shift away from national food sufficiency has increased drastically across developing countries – world cereal, wheat and rice imports have grown from 80, 46 and 6.5 million metric tonnes respectively in 1961 to 278, 120 and 27 million metric tonnes in 2001. The fastest growth of food imports has occurred in Africa, which accounted for 18% of world imports in 2001, up from 8% 15 years earlier (FAO 2004). Governments are often powerless to reverse this as policies imposed by the IMF/World Bank, such as removing subsidies for fertilizer or charging user fees for dipping cattle, directly affect the cost of agricultural inputs.

It is too late to reverse the demise of the agricultural sector in many of these countries. Moreover, especially in urban settings, people now want to eat imported foodstuffs such as wheat and rice. Reliance on the export of selected agricultural products to a few key markets makes many developing countries especially vulnerable to policy changes in these markets. For example, the European Union accounts for about half the exports to African countries and about 41% of imports. Ironically the least food-secure countries are most reliant on agricultural exports and therefore most vulnerable to policy and market changes.

Women are bearing the brunt of globalization, trade liberalization and HIV/AIDS. They are responsible for 80% of food production in Africa, including the most labour-intensive work such as planting, fertilizing, irrigating, weeding, harvesting and marketing. They achieve this despite unequal access to land (less than 1% of land is owned by women), to inputs such as improved seeds, fertilizer, information and credit (less than 10% of credit provided to small farmers goes to women). Their work also extends to food preparation, as well as nurturing activities. There is convincing evidence that women with similar inputs are more efficient farmers than men (Carloni 1987).

In summary, the current wave of liberalization is occurring in the context of massive concentration and control of the food system by corporations based in developed countries. Liberalization of agricultural trade has therefore further strengthened and consolidated an international division of labour in agriculture. In 1990, the OECD countries controlled 90% of the global seed market. From 1970–1996, the OECD share of the volume of world cereal exports rose from 73% to 82%; the US remained the world's major exporter of commercial crops such as maize, soya bean and wheat; and the share of Africa, Latin

America and Asia in world cereal imports increased to nearly 60% (Pistorius and van Wijk 1999). Liberalization has, on the whole, contributed to increasing inequalities within both developed and developing countries.

### **Globalization and diet**

The globalization of the food chain and the concomitant concentration of power and control by transnational corporations are also changing diets rapidly, such as the sharp rise in meat consumption among urbanized populations in developing countries. This shift is accelerating as the corporations seek new markets. McDonalds and other similar chains are taking full advantage of the opportunities: by 1994 a third of McDonalds restaurants were outside the US, accounting for half of its profits, and four out of every five new ones are overseas. Many developing countries have their own versions of McDonalds. Within a comparatively short time from their introduction in China, a poll found that two in three Chinese people recognized the brand name of Coca Cola, 42% recognized Pepsi and 40% recognized Nestle.

The global marketing and systematic moulding of taste is a central feature of the new globalization of the food industry (Barnett and Cavanagh 1994). In Vietnam, 'international branded ice cream is better funded and has the advantage of up-market foreign cachet, both expanding the market in dairy products (in a low dairy consumption country) and their market share' (Lang 2001). In the US alone the food industry spends over US\$ 30 billion on direct advertising and promotions – more than any other industry. In 1998, promotion costs for popular sweet bars were US\$ 10–50 million, for soft drinks up to US\$ 115.5 million and McDonald's just over a billion (Nestle and Jacobsen 2001). Food advertising expenditures in the developing countries are lower but growing fast as incomes increase. In south east Asia, for example, food advertising expenditures tripled between 1984 and 1990, from US\$ 2 billion to 6 billion. Mexicans now drink more Coca Cola than milk (Jacobsen 2000).

The uptake of a high-fat, high-sugar diet is especially pervasive among newly urbanized populations. Between 1989 and 1993 the number of rich urban Chinese households consuming a low-fat diet (less than 10% of calories from fat) fell from 7% to 0.3% and those consuming a high-fat diet (more than 30% of calories from fat) rose from 23% to 67% (Popkin 2001). Transitions in diet that took more than 50 years in Japan have occurred in less than two in China. The savings in preparation time, the convenience and sometimes the value for money of street and fast foods are important factors, but the dietary transition has also been explicitly encouraged through investments such as the World

Bank's US\$ 93.5 million loan to China for 130 feedlots and five beef processing centres for its nascent beef industry and the entry of large food multinationals and food retailers (McMichael 2004).

### **Muted responses**

Developing countries cannot afford these epidemics of under- and over-nutrition. The direct medical costs of obesity are estimated at US\$ 40 billion per year in the US alone. Prevention is the only feasible solution for developing countries. However, in the face of the monumental global changes in production, marketing and retail driving these epidemics, the present dominant focus on individual lifestyle changes (eat less fat, cut down on salt intake etc) is clearly not sufficient. This ignores repeated and expensive failures in attempts to change diets through improving knowledge alone. As Nestle et al. (1998) point out when discussing the North American diet: 'Despite two decades of recommendations for fat reduction and the introduction of nearly 6000 new fat-modified foods within the last five years, the population as a whole does not appear to be reducing its absolute intake of dietary fat.'

In summary, diets across the globe are being shaped by a concentrated and global food industry that is continually battling to increase demand and sales. Public health attempts to restrict this are being resisted fiercely (Chopra and Darnton-Hill 2004). Moreover, the international agencies are under great pressure from big business. The privatization of public health, one aspect of economic globalization, is impoverishing and commercializing the UN agencies concerned with nutrition, food policy and public health. This is the context for the 'private-public-people-partnerships', such as GAIN (Global Action and Information on Nutrition) instituted by the Gates Foundation, that are said to be a way of delivering health more effectively and efficiently. But these partnerships have the potential to increase market penetration by the transnational food and drug industry. The WHO/FAO technical report on diet, nutrition and the prevention of chronic disease (2002) is a recent example of the food industry creating a smokescreen of apparently conflicting scientific data to subvert WHO's response to the overnutrition epidemic (Cannon 2004). The experience of the Codex Alimentarius Commission provides another example (see Box D3.3).

Multilateral collective strategies, at least the development of international standards and national legislation, are essential to protect and promote national food security and public health (Chopra et al. 2002) and require strong leadership from international agencies. Civil society will have to play a more active role. The concept of food security must be recaptured and reframed in

### *Box D3.3 Regulating the food industry*

The Codex Alimentarius Commission is an important body jointly established by FAO and WHO to develop food standards, guidelines and related texts such as codes of practice. These aim to protect consumers' health, ensure fair practices in the food trade, and promote coordination of all food standards work undertaken by international and governmental bodies and NGOs.

The Codex has assumed much greater power since the establishment of the WTO, which will use Codex standards in trade disputes. A 1993 review found it had 26 representatives from public interest groups compared with 662 industry representatives. Nestlé, one of the largest food companies in the world, sent over 30 representatives, more than most countries. Only 7% and 10% of representatives came from Africa and Latin America respectively, compared to over 60% from Europe and North America. Nearly 40% of the participants on the working group on standards for food additives and contaminants represented transnational corporations of industry federations, including 61 representatives from the world's largest food and agrochemical companies (Avery et al. 1993). Despite agreement to address these imbalances, 71% of developed countries were represented at a key meeting in 2002 but only 18% of developing countries. There were 95 government delegates (43% of participants) and 90 industry delegates, and the majority of industry delegates were on government delegations.

public health and environmental terms. A corporate model of monoculture and standardized processed foods expands the distance between producers and consumers, appropriates increasingly scarce land in the global south for export agriculture, accelerates adverse climatic effects, and concentrates inordinate power in the hands of a few transnational corporations to determine who gets to eat what. Reversing this process requires coordinated action on many fronts to restore food to the status of a human right as well as a cultural right, where ecological and cultural diversity is respected and sustained, and food is once again recognized as more than just another commodity.

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