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A New Era of World Hunger?

The Global Food Crisis Analyzed

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1 Background

This paper takes as a starting point an international conference, held in New York in April 2008, organized by the Friedrich Ebert Foundation and Global Policy Forum. The conference considered the right to food and the role of the United Nations in responding to the global food crisis. Seventy experts from more than thirty countries attended. This paper is not a formal account of the conference proceedings. Rather, it starts from the main themes discussed and tries to take the debate further – both the causes of the crisis and the responses that are called for. It argues for effective short-term aid and long-term transformation of the agricultural system to make it more justly distributive, resilient, and sustainable for the future.

2 Introduction

A global food crisis has erupted. In spite of record crops, prices are skyrocketing and reserves dwindling. The media run news of urgent international meetings and promises of official action. Even the most affluent governments feel anxious about the future, while governments of poor countries are in a state of high alarm.

In recent years, while food production was said to be adequate for the world's people, more than eight hundred million suffered from hunger and chronic malnutrition. Now, over a hundred million *more* people have sunk into serious malnutrition or worse.

According to the Food and Agriculture Organization (FAO) twenty-two countries are particularly vulnerable to the recent food price increases, because they are very poor and because they import much of their food needs, as well as increasingly costly petroleum. The difficulties are now spreading. Food riots have shaken over thirty nations. And there are four times as many cereal-importing countries as cereal exporters. So governments everywhere are taking urgent measures. Some are blocking food exports and increasing subsidies for basic foods and bread. Many are giving emergency assistance to farmers, while mobilizing security forces to clamp down on hungry protesters. And they are desperately hoping that prices will recede.

How could a crisis of this magnitude have emerged so suddenly, with so little anticipation by most experts and policymakers? A farsighted few warned of the dangers, but they were not heeded.

The United Nations was caught off guard along with the others. It had affirmed food as a basic human right and done much to provide emergency food aid and agricultural development assistance, but it had not managed to eliminate serious hunger or to foresee the looming crisis.

3.1 Facts Behind the Crisis

While grain harvests reached record levels, prices of corn increased 131% between January 2005 and February 2008, while wheat prices increased 177% in the same period and rice increased 62%. Similarly, from December 2005 to March 2008, soybean oil rose 175%, coconut oil 153% and palm oil 137%. These are the highest price increases in 30 years and some of the highest on record.

Generally, grain stocks have fallen to very low levels in relation to overall consumption. Low stocks have contributed to price increases and left very little buffer in case of future crop failures. As grain consumption continues to run above the level of production, stocks may sink further, to dangerously low margins.

The price spikes have caused sudden problems in the emergency food aid system. The World Food Programme (WFP) and other agencies have seen their budgets shrivel in terms of purchasing power, while the need for assistance to hungry people has grown sharply. In March 2008, WFP announced that it would need $755 million more, just to meet its already-announced program needs. Shortly afterwards, World Bank president

Robert Zoellick said that billions would be required to overcome the crisis. WFP now speaks about a "new era of hunger."

3.2 Population Pressure

The steadily increasing human population puts great pressure on the global food supply, especially because food is so unevenly distributed. The number of people on the planet has reached 6.5 billion (up from 2.5 billion in 1950) and the number is expected to rise much further – to a peak of 9 billion by 2050. Each year, the world's population grows by 78 million people, about the size of Germany. Population growth over the past century has been accompanied by enormous increases in food production. But today's new investments are having much less effect on productivity. With steeply rising energy and fertilizer prices, some analysts now doubt that future production can keep pace, if based on the same energy-hungry production model.

Each year, cities, roads, airports, golf courses, suburbs and other human uses swallow up vast tracts of prime agricultural land. Erosion takes away further acreage, while deserts expand and water resources shrink. Wasteful and upscale consumption among the world's billion affluent citizens commands a growing share of the total agricultural output, while biofuels devour still more.

Between 2000 and 2007, world grain production increased substantially, but consumption increased still faster, resulting in a fall of reserve stocks – by 53 million tons in 2007 alone. Stocks are now just a small fraction of total annual consumption, so we have scant reserves left as a hedge against future harvest failures.
Technological optimists insist that solutions will be found. They say that a "New Green Revolution" will feed the billions yet unborn and the hungry people already with us. But time is short and the miracle technologies are not yet in sight. Most disturbingly, the previous Green Revolutions gave us an unsustainable agricultural system that should not be further amplified, while population growth presses on the limits of the global ecosystem.

3.3 Consumption Patterns

Consumption patterns worsen the food crisis because higher income consumers grab such a large share of the globe's food. They consume more volume and also want products such as meat and dairy, which make heavy demands on feed grains and land for grazing. Beef cattle eat seven pounds of grain for every pound of beef produced. US citizens consume, on average, an astounding 275 pounds of meat each year, while people in Denmark consume even more – 321 pounds. By contrast, Nigerians consume just 19 pounds and Indians consume only 11 pounds (2002 data).

People in rich countries have constantly-changing consumption patterns. They demand increasingly rich and varied diets that include year-round fresh fruits, exotic coffees, nuts, and wines, not to mention farmed fish, cut flowers and other high-end items. They eat more frequently in restaurants, where large and wasteful portions are routinely served. Such forms of super-consumption use farmland, energy and water that could be producing more basic foods.

These well-off consumers have now been joined by millions of newcomers from China, India, and other developing countries, where rapid economic growth has led to increasing incomes for the new urban middle class – creating new food demands and changing consumption that mimics the patterns of rich countries.

The new consumers of the global South are shifting to diets rich in meat and dairy products. China's meat consumption has increased more than 150% since 1985 (in 2007, China imported 35 million tons of soybean oilseed, mostly as animal feed). The shift steadily drives up worldwide grain consumption. The new middle classes also eat more processed foods, which require energy inputs and create more food waste. Supermarkets and fast-food restaurants are also

part of the new lifestyle, which is not necessarily healthier. A global obesity pandemic attests to the new dietary problems, with 400 million people now seriously overweight.

Alongside the new middle classes, there are hundreds of millions of people who remain in dire poverty and whose access to a regular food supply is very tenuous. Even in rich countries there are tens of millions of people who are "food insecure." Poor families must make very difficult choices in their meager budgets. Those subsisting on the lowest incomes have been forced to cut back on their diets, even reducing the number of daily meals. Misery and severe malnourishment, if not outright starvation, are the inevitable result. Those that survive face serious long-term health consequences, like stunting and mental retardation.

3.4 Trade

Trade greatly influences the world food system. Controversies rage about the effects of trade rules. But it seems clear that "free trade," offered as a panacea by the powerful food exporters and their mainstream economists, is seriously flawed.

Ironically, the free trade promoters -- the United States and the European Union -- do not practice free trade in food. Far from it. They provide heavy subsidies to their agricultural sector (an estimated $300 billion combined per year). They also erect food import barriers and they export foods at artificially low prices. They demand that poor countries accept these trade barriers and under-priced imports (with serious damage to local farmers) and they urge these countries to switch to specialty crops for export. The World Bank and the International Monetary Fund have been enforcing these rules for years, under harsh Structural Adjustment Programs and the conditions built into loan agreements. Free trade agreements such as NAFTA, unequally bargained, add to the problem.

Domestic production of food for the local market in poor countries has declined, as a result of these policies and pressures. Many poor countries no longer produce enough to feed their people and depend on imports of basic grains. Corn was first bred in Mexico millennia ago, but recently its farmers have been decimated by subsidized US exports. Mexico now imports nearly half its corn needs from its big neighbor to the north. Recently, as corn prices climbed, Mexico was shaken by protests, known as the "Tortilla Crisis."

Even countries that were formerly net exporters, like the Philippines, must now import to meet their food needs. The system is not putting food where it is needed most, but many economists urge further trade liberalization in food, on grounds of long-term "efficiency" and "comparative advantage." They are talking about a theoretical world, not the real one, with its very unequal power, protectionism by the strong, and harmful trade outcomes.

Another exception to the "free market" is the group of powerful food companies like Cargill and Archer Daniels Midland. They exercise great influence over the international markets and reap large profits through their size, financial muscle and cartel behavior (see more below).

Food aid has also been part of the trade problem, since the rich countries often dump their surpluses as "aid for the hungry," undercutting local producers and even driving them out of business. Credits offered to poor countries for agricultural imports cause problems too. They boost indebtedness and often create import dependency.

In the name of free trade and free markets, the World Bank and the IMF have pressured all countries to reduce or even eliminate government buffer stocks and market intervention – and to end aid, credits and advice to small farmers. Even the United States has abandoned its system of national grain reserves, as the private grain traders have taken charge. These privatization policies – deadly to the state's responsibility to protect its farmers and feed its own people – have fueled the crisis.

Some governments, including India, Pakistan, Argentina, Russia and China, have recently taken steps to block exports of food, to protect their own "food sovereignty." Mainstream economists are strongly opposed to such trade barriers, pointing out that they harm poor food-importing countries and contribute to price rises on international markets. But exporting governments cannot ignore their own people's needs in such emergency circumstances. More than thirty countries have now moved in this direction. No preaching of free trade theory will convince them to lift these barriers, especially if the preachers ignore their own glaring trade barriers and market distortions.

Meanwhile, food-short countries with large cash balances like Saudi Arabia, Japan, South Korea, and China are trying to secure future food supplies by buying up land in poor countries like Indonesia, the Philippines and even Mongolia, promising to invest and bring prosperity to poor regions. Vast tracts have already been purchased, amid controversy from citizens in the areas concerned. Such a rush to lock in food supplies is creating further trade distortions, privileging those with the most money and setting off multiple environmental problems, as mega investors cut forests, drain wetlands and seek maximum production on an unsustainable basis.

The trade sector has many further problems. The rising cost of transportation from market to final consumer (due to soaring energy costs) is destabilizing the trade system and adding pressure to locate production closer to consumers. The carbon emissions due to food shipping – especially air transport of perishables – are also forcing a re-thinking of long-distance trade.

3.5 Biofuels

Environmentalists promoted biofuels in the 1990s as a "green energy" alternative to oil and the agricultural lobby pushed hard for legislation to promote it. Recently, with strong government backing, production and use has increased many-fold. The biofuel boom is now removing crops and cropland from the food system and bidding up food prices dramatically.

In 2007, producers converted an estimated 80 million tons of grain into biofuels, including a quarter of the US corn crop. In 2008, grain for biofuels will pass the 100 million tons mark. Since less than a quarter ton of grain feeds one person for a year, biofuel production in 2008 will, in effect, remove the food for four hundred million people from the marketplace. Biofuel apologists argue that humans do not eat the corn used for ethanol production. But such arguments are misleading. The corn is used for many food purposes, especially feeding animals that people eat. And its cultivation displaces wheat and other important food crops.

Not all biofuels are equally efficient as energy converters. Brazil points out that its major biofuel – made from sugarcane – is much more efficient than corn ethanol made in the United States. And Indonesia promotes its palm oil biodiesel as efficient also. None can deny that corn ethanol, protected by a steep US tariff, is the least efficient in this product line. But all biofuels suffer from similar environmental and humanitarian problems. Brazilian and Indonesian biofuel plantations have been established by clearing rainforests and planting in fragile soils and ecosystems.

As new and definitive reports set out the ills of biofuels, most analysts have concluded that crop-based biofuels (using corn, oilseed and sugar cane) are unsustainable drivers of the food crisis. Even "second-generation" biofuels (using agricultural wastes, switchgrass, jatropha and wood chips) now appear to have serious problems.

The Bush administration in Washington has brushed off critics, saying that biofuels only contributed 3% to recent grain price hikes. But in April 2008, a Word Bank assessment concluded that biofuels are "the major cause of the increase in food prices," responsible for more than 50% of the overall price increases. The Bank suppressed the report, apparently for fear

of angering the Bush administration, but the Guardian newspaper eventually leaked it in July 2008.

Biofuels are now heavily subsidized – about $1.50 per gallon in the United States according to some estimates – and they are mandated by law as a percentage blend in gasoline and diesel fuel – in the US as well as the EU. The mandates call for further regular increases in the percentage blend. Current US legislation requires a five-fold increase by 2022. But the policy momentum may be slowing. The UK government released the Gallagher Report in July 2008, a study that proposed a reduction in blend targets, because of serious questions about biofuel impact on food prices and environmental sustainability. The European parliament has also called for a downward revision of targets.

A number of other studies have shown that biofuel production is contributing to soil erosion and serious depletion of water resources. Ironically, biofuel production requires a great deal of petroleum – nearly as much as it replaces in the case of corn ethanol. So it fails to solve the problems of high petroleum prices and climate change as promoters claim.

Big companies are rushing into biofuel production to capture the big subsidies, creating a powerful lobby to expand mandated use and boost subsidies still further. Unless governments reject these pressures and heed the urgent warnings, biofuels will rapidly worsen the food emergency.

3.6 Climate Change

Climate change is already harming agriculture. The negative effects include droughts, desertification, more frequent and serious storms, intense rainfalls and floods. Unusual rains have drowned crops and carried away topsoil. Increasing temperatures have enlarged the range of pests and crop diseases.

The multi-year drought in the Australian wheat belt and persistent flooding in Bangladesh are two highly-visible agricultural crises attributed to climate change.

Agriculture and climate change are tied together in a “feedback loop.” While climate change negatively affects agriculture, agriculture in turn negatively affects climate. Agriculture, as practiced in the modern sector, is heavily dependent on fossil fuels to build and operate agricultural machinery, to power irrigation systems, to create fertilizers and pesticides, to dry and store crops, to process foods, and to transport foods to the marketplace. Agriculture also contributes to the release of methane and nitrous oxide, mostly through rice farming and livestock production. These gasses have a much more potent greenhouse effect than carbon dioxide. Some experts estimate that the agricultural system contributes a third of all climate changing gas releases – progressively reducing long-term food productivity in the process.

3.7 Soil Depletion and Water Shortage

Modern ploughing, overgrazing, fertilizer and pesticide use result in the steady depletion of worldwide topsoils. Water and winds carry away the bare soil, when it is not fixed by plant cover. An estimated 25 billion tons of topsoil are lost to erosion each year. Flooding and heavy rainfalls, due to climate change, worsen the process. The UN estimates that erosion has now seriously degraded about 40% of the world’s agricultural land.

Food production requires a lot of fresh water. World-wide about 70% of fresh water use is for agriculture. But water resources are getting scarcer in all world regions, as demand soars for drinking water, industry, recreation, and other uses, as well as more intensive farming methods. Heavy pumping of underground water has drained aquifers and lowered water tables. Large dams for irrigation and flood control have been built on many of the world’s rivers, so there are now far fewer opportunities to use this approach. In fact, dam-based irrigation has caused salt leaching on farmlands, which lowers

productivity dramatically or even ends fertility altogether.

Climate change contributes to water shortages too, by reducing the dependability of rain-fed agriculture and by lessening the moisture in many regions. Serious droughts are showing up in key watersheds like the Colorado River basin in the United States. In China in recent years, the lower course of the Yellow River, about a mile wide, has been nearly dry for many months of the year, with serious agricultural consequences.

While worldwide soil depletion and water shortages have not altered food availability dramatically in any single recent year, the cumulative effect of these trends has deepened the crisis, by undercutting both yield and land available for cropping. As these trends continue, their impact will be increasingly severe.

3.8 Fuel and Input Costs/Fall of the Dollar

Oil prices have been rising rapidly, as oil gets scarcer. This has driven up agricultural prices, since industrial agriculture depends so heavily on petroleum every step of the way. Because oil is priced in dollars, the falling dollar has spurred this input inflation. Dramatic input price hikes have caused as much as 20% of the overall growth in food prices, according to the World Bank.

Experts wonder whether these fuel and related input cost increases are only temporary and what direction future prices are likely to take. Apparently, petroleum is now reaching its maximum or "peak" production, while world fuel demand is continuing to rise. So oil may soon soar to $200 or more per barrel and farm input prices will continue to rise. It will be progressively more difficult and expensive to expand agricultural production and yields by industrial methods.

3.9 Speculation

Speculation in international commodities markets has contributed to upward pressure on food prices. Big institutional investors have moved billions of dollars into commodities markets like oil, metals and foods in response to the stock market decline and the slide in real estate values. Food processing companies, governments, big farmers and even aid agencies have entered the markets to hedge their future costs. Activity in the futures markets has recently quadrupled, with a likely significant effect on prices.

The World Bank points out that low and declining buffer stocks contribute to a speculative fever, by increasing fear of a global food crunch. The international financial system, with its high degree of worldwide integration and its very low regulation and oversight, lends itself to "irrational exuberance," "herd behavior" and speculative bubbles, If fuel, commodities and foods continue to get scarcer and prices continue to rise, speculation could have an even more serious and destabilizing effect in the future.

3.10 Agro-Companies

Huge companies like Cargill, Nestlé, Monsanto, ConAgra, and Archer Daniels Midland dominate the world's food system. They control very large shares of the international markets for grains, fertilizers, pesticides, and seeds, and they are involved in the food system from the farm to the supermarket. Farm equipment manufacturers, such as giant Deere & Company, are also influential, as are the big food retailers. These companies shape government food policy and most are greatly benefiting from the crisis.

Cargill's profits were up 86% in the quarter ending in February 2008 and the profits of Bunge, another big trading concern, soared 2000% in the quarter ending March 2008. The European Union launched an investigation in Italy of Cargill and Bunge in July 2008, in

response to Italian consumer protests over soaring pasta prices.

Cargill, with 158,000 employees and annual revenues of about $90 billion, operates in 66 countries and controls 25% of US wheat exports. It is one of the world's leading producers and marketers of phosphate and potash fertilizers, as well as meat, poultry and eggs. In 2004, Cargill settled a suit accusing it of rigging prices in the corn sweetener markets and it is under investigation again for price-fixing.

Archer Daniels Midland (ADM) is another giant US food and trading company with turnover of $44 billion. It operates in many markets including corn sweeteners, flour and food additives, and it owns shipping and trucking subsidiaries as well as mills and storage facilities worldwide. In 1993 it was found guilty of price fixing and fined $100 million by the US government. In 2000 and 2003, the US government fined ADM for massively violating environmental air quality laws. ADM has been criticized for cutting down rainforests in Brazil and Southeast Asia to grow soy and palm oil for biofuels. The company has made a very heavy commitment to biofuel development worldwide.

3.11 The Modern Agro-Industrial System

Modern agriculture has moved away from small peasant farms towards capital-intensive production on large holdings. Corporate landowners now own much of the land in the modern sector. But, very poor people perform most farm work, whether on the remaining peasant lands or in the agro-industrial farms. They work long hours and do back-breaking labor. The frightfully low cost of their labor subsidizes world food supplies while their own educational, social, and political opportunities are minimal. Many are chronically hungry.

Modern agricultural practices have led to huge increases in worldwide food yield and food production, especially in the past half century. But agro-industry has relied on methods that are environmentally unsustainable and heavily dependent on cheap energy. Short-term profits have often driven change, to the neglect of long-term environmental protection. Today, everywhere in the world, food production is threatened by soil erosion, water scarcity, the expansion of human settlements, and climate change. Rising fuel and other input costs suggest that the era of cheap agriculture is coming to a close.

More research and more investments in high-tech solutions (the "New Green Revolution") may possibly keep production rising for a few more years, especially if new lands are brought into cultivation. But output is unlikely to grow by 50% through 2050 as the UN Secretary General and the World Bank President insist it must. That gigantic increase would be necessary to feed the next 2.5 billion people, to lift another billion out of hunger, to satisfy further leaps in upscale food consumption and to produce millions of additional gallons of biofuels. The growth optimists want the same world, only more of it – an enterprise liable to fail on a grand scale.

Fortunately, movements for change are gathering momentum. Global efforts to promote "fair trade," organic foods and locally-grown produce have taken root among consumers. Agricultural scientists are speaking forcefully for new food production approaches. A broad NGO movement has arisen to end hunger and promote sustainable agriculture. And Via Campesina, a powerful worldwide network of peasants and agricultural workers, is demanding far-reaching change.

It's time to recognize that the agro-industrial approach has *already* failed us. It has caused the present crisis, allowed a billion people to go hungry, drastically reduced biodiversity, and nearly ruined the ecosystem. This agro-industrial model is deeply entrenched in political systems, global corporate interests, and embedded farming practices. It will not be easy to change. But change it we must!

4 Policy Approaches: the Near Term

Effective change must be deep and long-term, but in the face of a global emergency, a number of short term actions command the most immediate priority. They are:

Food Aid
The first response to the food crisis must be to help the poorest billion people who are most severely hit. Effective action will need worldwide coordination through the United Nations and it will require:

- billions of dollars in allocations by donor governments to international aid programs, including the World Food Programme and NGOs
- aid allocation based on comparative need and not on donor countries' geo-strategic priorities as is usually the case
- strengthened global funding for fast and even-handed response, notably the Central Emergency Response Fund (CERF) at the UN that should be increased to at least $1 billion
- strengthened programs by WFP and other agencies to deliver food aid, and to use diverse approaches such as cash for food, work for food, school lunches and similar programs designed to help deliver assistance most effectively
- strengthened redistributive social programs that put cash grants into the hands of needy families, enabling food purchases
- aid targeting and delivery that always takes care not to damage local farmers by not dumping food and not driving down prices in local markets

Assistance to/Learning from Farmers
Parallel to the immediate food aid, there must be near-term assistance to farmers, particularly peasants and small farmers, to enable them to sustainably improve their output. This should be organized not as a top-down, tell-the-farmers-what-to-do process, but as a process that would support and respect local farmers' own sustainable practices and learn from them. A coordinated approach at the international level would include:

- subsidies and concessional credit to help finance production costs of small farmers
- help in crop storage and marketing
- agricultural extension services to learn from farmers and pass along best practices

Strengthen Government Management of Cereal Stocks
Decades of trade liberalization and privatization have reduced governments' ability to manage cereal stocks, oversee supply and prices, and insure a steady supply of reasonably priced food. Urgent steps to fix this would include:

- an end to pressures for privatization of food stocks
- international assistance to governments (and regional bodies) to enable them to set up or strengthen the storage, management and distribution of grain buffer stocks

Brakes on Biofuels
As the huge impact of biofuels on the food system becomes clear, there must be immediate steps to address and change biofuel policy. This should include:

- immediate freezing of growth in mandated biofuel mixtures for transportation fuel
- paring down and quickly ending biofuel subsidies and fuel mixture mandates

- developing transportation alternatives that are not based on carbon-type fuels

- moving quickly to an outright ban on biofuels unless they can be proven to be carbon neutral and fully sustainable

Curbs on Speculation and Price Fixing
Every effort should be made to prevent speculation on food prices and price-fixing by big trading firms. Given the predictable opposition from the financial and corporate sector, this will not be a simple matter. But basic steps could include:

- vigorous investigation of the big trading companies' cartel practices and price fixing

- new rules limiting food market activities to governments or other entities with a license that verifies legitimate end-uses

- hedging rules that limit investment to legitimate purposes

- vigorous prosecution for violations of rules that lead to speculative price run-ups

Clarify and Strengthen the Right to Food
The international community should work to strengthen the right to food as a basic human right

- human rights organizations, governments, and the UN should work together to define the right to food, in clear and unambiguous terms, involving concrete action and implementation

5 Policy Approaches: the Longer Term

Policy steps for a thorough transformation of the food system will require a tremendous political effort and a powerful coalition for change. A few general thoughts about policy goals are in order.

- **Population:** There must be a far more vigorous approach to population issues, through promoting women's choice and committing governments to stabilizing and eventually reducing global population size.

- **Consumption Patterns and Distribution:** There must be policies that promote a more just distribution of food (and income to buy food). This implies a new commitment to redistributive, egalitarian public policies, after decades of increasing income disparities and the consequent food maldistribution. If consumers had to pay the full costs of the food they eat, including the costs of protecting the environment, unsustainable consumption, especially of meat, would greatly decrease.

- **Trade:** There must be new approaches to trade policy, towards more fairness and less double standards in the trade system. Efficiency must be balanced against a realistic approach to the advantages of local production. Sustainability concerns as well as rising energy costs and demands for food sovereignty and local sourcing will contribute to more localized food production.

- **Climate Change:** There must be urgent action to stop climate change if the food system is not to collapse in coming decades. Agriculture, with its large contribution to greenhouse gas emissions, will have to be re-organized substantially as part of this process.

- **Soil Depletion/Water Shortage:** There must be radical new agricultural practices that will conserve the soil and conserve water resources. Short-term approaches to profit maximization at the expense of the environment must be strictly outlawed.

- **Fuel/Energy:** Oil appears to have reached its peak production, so supplies will decline in the future. Immediate steps must be taken to develop a much less energy-intensive agricultural system. New energy sources for agriculture will also be required, such as fuel-cell equipment, solar and wind-based electricity.

- **Trading and Agro-Industrial Companies:** The giant companies have a very negative effect on the agricultural and political systems and steps must be taken to curb the harm they cause, through better rules, regulation and enforcement – and through public bodies assuming some of these activities.

- **Labor/Land/Politics:** There must be concerted efforts to improve the income and work conditions of peasants/small farmers and of farm workers. Land (re)distribution will be an important policy tool, which could also increase production when neglected estates are broken up. A well-fed world cannot be founded on poverty and exploitation in the agricultural sector.

- **Agro-Industrial System:** The world food system is diverse, but the agro-industrial model now dominates and shapes change. We must look beyond the outmoded "New Green Revolution" towards a system with less emphasis on narrow rules of efficiency and more focus on resilience, sustainability, biodiversity and distributive fairness. Production will be more local and will likely involve urban as well as rural populations. The knowledge and practices of local farmers will be recognized as critically important. Technology will help promote progress, but always to advance a more just, sustainable, and well-nourished society.

Appendix 1: Resources – Publications

Lester Brown, *"Falling Water Tables, Falling Harvests,"* Earth Policy Institute, June 2008

- Lester Brown. *Outgrowing the Earth*, New York, WW Norton, 2004
- Courville, Raj Patel and Peter Rosset, *Promised Land: Competing Visions of Agrarian Reform*, Okland, Food First Books, 2006
- John M. Connor, *Global Price Fixing*, Boston, Kluwer Academic Publishers, 2001
- *International Assessment of Agricultural Knowledge, Science and Technology for Development*, Report, April 2008
- Intergovernmental Panel on Climate Change, *Fourth Assessment Report*, Geneva, 2007, chapter 5
- International Planning Committee for Food Sovereignty, *Civil Society Statement on the World Food Emergency*, June 2008
- Dennis L. Meadows and Eric Tapley, *Limits to Growth: the 30-year update*, White River Junction, Chelsea Green Publishers, 2004
- Sidney Mintz, *Sweetness and Power*, New York, Viking, 1985
- Raj Patel, *Stuffed and Starved*, London, Portobello Books, 2007
- Michael Pollan, *The Omnivore's Dilemma*, New York, Penguin, 2006
- Renewable Fuels Agency, United Kingdom, *The Gallagher Review of the Indirect Effects of Biofuels Production*, London, HMSO, July 2008
- *"Speculation and World Food Markets," IFPRI Forum*, International Food Policy Research Institute, Washington, July 2008
- Tom Wright, Mariam Faim and Patrick Barta, *"Ex- porting Farmland to Feed Global Demand," Wall Street Journal*, July 11, 2008

Appendix 2: Resources – Organizations

- Bread for the World
- Earth Policy Institute
- Food and Agriculture Organization
- Food First/Institute for Food and Development Policy
- Institute for Agriculture and Trade Policy
- International Food Policy Research Institute
- International Fund for Agricultural Development
- International Planning Committee for Food Sovereignty
- International Water Management Institute
- Oxfam
- Small Planet Institute
- Via Campesina
- World Food Programme
- Worldwatch Institute

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