

## Commodity Markets and Food Security:

### The Global Food Crises of 2008 and 2011- Causes and Remedies Joachim von Braun<sup>1</sup>

#### **Abstract**

*The rapidly rising and more volatile food prices of recent years are an important expression of changes in global markets and resource scarcity. Food is an essential good, but when food prices spent decades moving downward, the food sector held little interest for policymakers and investors. Now, faced with rising food insecurity, social unrest, and accelerated inflation driven partly by food prices, developing and developed countries and international governmental and nongovernmental organizations have begun responding with a new sense of urgency. The price crises of 2008 and 2011 have been met with some policy changes, but the sense of urgency about preventing human suffering has not yet translated into comprehensive action on both the supply and demand sides of the world food equation. Although food grains are viewed mainly as commodities, they are also the basic food of the poor and the “currency” of the bottom 2 billion people, who spend large shares of their income on them. This paper proposes institutional changes in the world food system to help overcome the inflation in this currency of the poor. It outlines approaches to overcoming chronic supply constraints through enhanced productivity, combined with actions to address new causes of food crises and emerging risks, such as links to financial markets, energy, water, and climate change. Remedies will require a package of new public policy actions that foster agricultural growth and protect the vulnerable. The paper also describes some promising international initiatives recently carried out by the private sector.*

#### **The Causes**

Food security—the availability of and access to sufficient amounts of healthy food and good nutrition—is central to the well-being of countries and people. Since long, food security is not achieved and this unresolved problem of humanity can be referred to as the global food crisis. More narrowly defined the two recent acute spikes of food prices in 2008 and 2011 can be understood as two food (price) crises in a row. In the context of the interlinked food and economic crises of 2007–2008 and again in 2010–2011 food insecurity has further increased. The food price crisis of 2008 actually came first and overlapped with the onset of the economic recession. In fact, rising food and energy prices, to which macroeconomic policies reacted, may actually have played a role in the onset of the recession.

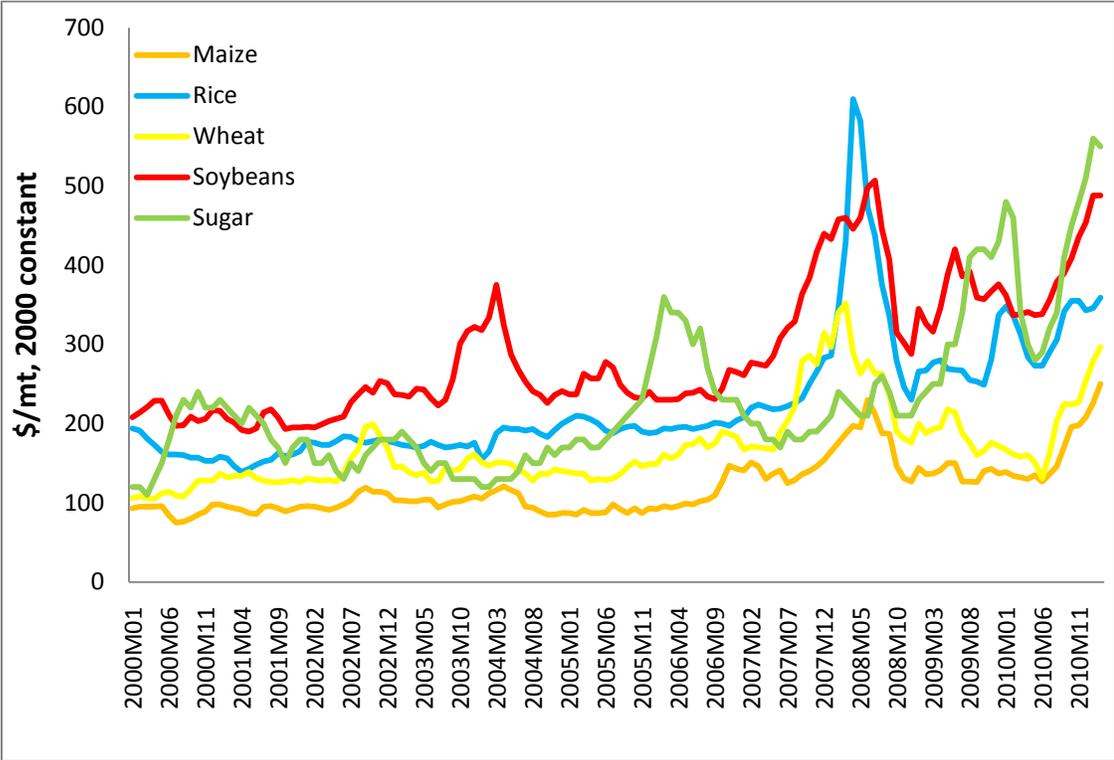
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Basically, the food price crises are the consequence of neglected investment in agriculture in many developing countries and inappropriate agriculture energy subsidies in industrial countries; they were triggered by adverse weather events and exacerbated by export restrictions (von Braun 2008). In 2007–08, the price of almost every food item sharply increased. At their peaks in the second quarter of 2008, world prices of wheat and maize were three times higher than at the beginning of 2003, and the price of rice was five times higher (Figure 1). Prices dropped thereafter, mainly because food demand slowed with the global financial crisis and recession and weather conditions became more favorable, but prices spiked again in 2011.

**Figure 1—International grain prices**



Source: Compiled from World Bank data.

The rapid expansion of biofuel production in the past decade due to subsidies has indisputably created new linkages, trade-offs, and competition with food. It has also introduced new food-security risks and challenges for the poor. Indeed, rising demand for biofuel feedstocks has introduced a fundamental change in world food price determination. The amount of grains diverted to ethanol production more than tripled from 2004 to 2008, and this diversion was one cause of the 2008 food crisis. It has further expanded between 2008 and 2011 in Europe and the US and remains an important factor for the more constraint supply of food and feed.

Not only food and energy markets, but also food and financial markets are now linked. These links pose new risks and uncertainties for the poor especially in least-developed countries. On top of these factors and triggers are the deficiency in the governance of food, nutrition, and agriculture, especially at global level. Globalization of agriculture has outpaced the capabilities of the inherited institutions of the food system. Actions taken so far are not sufficient to

overcome the crisis, let alone reduce chronic food and nutrition security problems. And food prices are expected to increase further in the long run, partly due to climate change, posing new risks and constraints. Supply and demand forces may cause maize (corn) prices to rise by about 100 percent by 2050 (Nelson et al. 2010), unless much larger investments in innovation are forthcoming.

### **Consequences and Ripple Effects**

The food crisis has large economic ripple effects: In 2010–2011, noncore inflation—that is, the inflation of food and energy prices—has become a worldwide macroeconomic threat, especially in Asia, where it accounts for 60–70 percent of total inflation in many countries. Food inflation is extremely harmful to the poor, who spend a much higher budget share on food than higher-income people do. Noncore inflation triggers pressures on wages, and central banks often follow suit by tightening monetary policy. Instead, governments should vigorously address the real constraints with action on the supply side. The macroeconomic costs of food crises are undervalued. The 2008 food price crisis came to an end because the global recession reduced demand, but this outcome cannot be expected in 2011.

Another ripple effect of the crisis is loss of trust in trade and the reemergence of self-sufficiency policies in many countries. That included limits or bans on food exports, increasing international political tensions. As major regional producers reduced the regional and global supply of grain, they became responsible for increased price volatility and other negative consequences for import-dependent neighboring countries. These countries will forgo benefits from trade and externalize domestic fluctuations in supplies, further increasing volatilities in international markets. Volatile food prices continue to undermine the food and nutrition security of the poor. With the extreme price increases for wheat and corn (maize) in 2010–2011, we were observing the continued volatility in the global markets. Low levels of grain stocks trigger speculative demand for grain as a commodity asset category further driving volatility upwards. International price increases are transmitted rapidly to consumers (urban and rural) and more slowly to producers, especially small farmers in developing countries. This situation means that the poorest people pay more for food right away, with adverse effects for their welfare, while producers do not immediately have an incentive to produce more in response to increased prices.

### **Increased Hunger and Malnutrition**

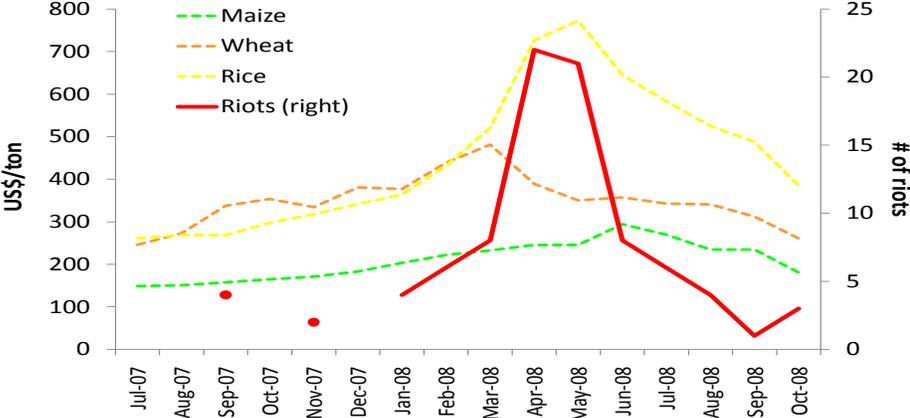
The most relevant price for the poor is the price of grain—especially wheat, maize, and rice. Maize prices increased by 105 percent between March 2010 and March 2011 on international markets, wheat by 102 percent, rice increased less in the 2011 crisis but even more than wheat and maize in 2008. The price increase implies that a kilo of wheat in many developing countries typically costs about US\$0.30 instead of US\$0.15—a critical difference for a person who lives on US\$1 a day, as do about 1 billion people. This kind of price increase requires poor people to cut back on other food and nonfood expenditures to maintain food energy consumption. Consequently, quality of diet and of livelihood suffers. The absolute number of undernourished people in developing countries increased from an estimated 823 million in 1990 to about 1 billion today. The food crisis has shed light on the highly deficient data about the scale and change of food and nutrition problems. The numbers about undernourished people are rough

estimates at best, and even less well accounted for is the increase in diet deficiency and related long-term—indeed, lifelong—health effects that impair physical and mental capacities. A rough estimate is that 2 billion people suffer from micronutrient deficiencies. Moreover, the prices of nonstaple foods, such as vegetables and pulses, have risen even more than grains, further adding to these deficiencies, especially in South Asia. Part of an appropriate response to the global food crisis needs to be an overhaul of the system of monitoring information on food and nutrition. However, there should be no doubt that the hunger problem has been increasing significantly due to the food price crisis, as more comprehensive data from selected countries suggest.

**Changing Patterns of Food Riots and Politics**

It has long been recognized that inequality and social and political conflicts increase food insecurity, but food insecurity can also be a source of conflict. Many governments had underestimated the strong links between food and political security in 2008. But the patterns of relations between food price crisis and political conflicts and food riots in 2008 differ from the ones in 2011. From January 2007 to June 2008, food protests—strikes, demonstrations, and riots over food -related issues—occurred in more than 40 countries, with some countries experiencing multiple occurrences and a high degree of violence (Figure 2). In the food price crisis of 2008 the price movements and the frequencies of riots moved up and down in surprising parallelism. In April 2008 unrests reached their peak when the global wheat price had doubled and the rice price tripled. Millions of people were directly involved. Food protests have affected not just poor countries, but include emerging economies with varying levels of income and government effectiveness. Food protests in countries with higher incomes and better governance have tended to be nonviolent in 2008, whereas protests in low-income countries and countries with low levels of governance quality have often involved the use of physical force or resulted in casualties. Within countries, as food prices increase, the urban middle class typically has the ability to organize, protest, and lobby, but the rural poor usually suffer silently for a while.

**Figure 2—Food riots and food prices, 2007–2008**



Source: von Braun 2008.

However, in the 2011 food price crisis, the patterns and political consequences of price–riot–relationships have become more complex than in 2008. Overall, in 2011 riots in direct response to price increases have occurred less frequently but the political consequences are still significant. Both sides, i.e. protesters and governments, seem to have learned from the earlier experiences in their own countries or neighboring ones. The responses of both, protesters and governments, were more sophisticated than in 2008. While protests in 2011 were again partly triggered by food price inflation, such as in Tunisia, coordinated protests were increasingly facilitated by improved communications through new media, such as twitter and face book. These riots can no longer be equated with historical bread riots or even the 2008 massive food protests but became symptoms of empowerment and part of more systematic uprisings. National governments’ political reactions to the crisis were often ad hoc and simplistic in 2008, but in 2011 larger preemptive efforts were made by many governments with increased price subsidies, price controls and income support in the formal sector. Preemptive government actions have been more swiftly but in many instances, such as in North Africa and the Middle East, “the street” was faster and more effective than governments’ response, and protests turned quickly to much larger events of regime changes. These developments have transformed food protests to embedded strategic elements of opposition movements and less of ad hoc street events. The experiences of the 2008 food riots have followed more straight forward patterns, but may have also facilitated the more sophisticated protests in 2011, when food prices were no longer the main cause of protest in many countries.

### **The Remedies**

Two kinds of policy actions to respond to high and volatile food prices must be distinguished: those largely in the domain of national governments and those best handled at the international level and requiring attention by global actors. Actions are needed at both levels. The focus in this essay is on international actions. In order to be comprehensive, these should include the following:

1. addressing the root causes with improvements in production and technology, including research and innovation; incentives for private investment; sound natural resource management related to soils, biodiversity, and water; and coordinated engagement for climate change adaptation and mitigation;
2. responding to and preventing food emergencies through sound trade , bioenergy, and grain reserves policies and prevention of excessive speculation in food markets; and
3. preventing undernutrition directly with social policies, such as income transfers and enhanced early-childhood nutrition programs.

In the following, the items of such a comprehensive agenda for food security policy are outlined.

## *1: Agricultural technology, resource management, and investment*

Technological breakthroughs, and their adoption on a large scale as in the Green Revolution in Asia in the 1960s and 1970s, were critical in preventing food insecurity. Numerous studies have shown that spending on agricultural research and development (R&D) is among the most effective types of investment for promoting growth and reducing poverty. Advances in plant breeding have increased staple crops' nutritional value, their suitability to subtropical and tropical weather conditions, and their resistance to diseases and pests. Genetic modification (GM) has created beneficial traits such as disease resistance, environmental improvement, higher nutritional value, and increased yields—traits that are difficult to achieve rapidly through traditional breeding techniques.

Disseminating new technology in agriculture requires substantial upfront investments in the foundations of effective technology utilization—that is, rural education, infrastructure, and extension services. However, public R&D investments have been stagnating since the mid-1990s, and the gap between rich and poor countries in generating new technology remains large, except in a few countries such as Brazil and China. At the global level, a science and technology initiative is needed to prevent further increases in agricultural prices, reduce competition for natural resources, and adapt to and mitigate the effects of climate change. That global initiative should focus on increasing agricultural productivity, making agricultural practices more sustainable, enhancing food quality and health, and improving natural resources management. The initiative can also address nutrition insecurity directly by breeding new varieties of staple crops that are rich in micronutrients. This approach would allow the poor to receive necessary amounts of vitamin A, zinc, and iron through their regular staple-food diets. This “biofortification” provides a means of reaching malnourished populations in relatively remote rural areas and delivering naturally fortified foods to people with limited access to commercially marketed fortified foods or supplements. If investments in public agricultural research were doubled, agricultural output would increase significantly and millions of people would emerge from poverty (von Braun, Fan et al. 2008). If these investments were targeted at the poor regions of the world—Sub-Saharan Africa and South Asia—overall agricultural output growth would increase by 1.1 percentage points a year and lift about 282 million people out of poverty by 2020. “Best bets” include innovative programs to revitalize yield growth in intensive rice and wheat systems in Asia, increase small-scale fish production, address threatening pests like virulent wheat rust, breed maize that can be grown in drought-prone areas, and scale up biofortified food crops.

The fast rising food prices has increased commercial pressure on land and implicitly on water resources for agriculture. It is therefore not surprising that farmland prices have risen throughout the world in recent years. The global expansion of land markets is driven mostly by domestic players, but also partly by growing transnational acquisition of land by financially strong investors, including some that act directly or indirectly on behalf of countries attempting to improve their food security in view of domestic scarcity of land and water. In many developing countries land rights are not well defined. An appropriate code of conduct for governments and investors in developing countries should be developed (von Braun and Meinzen-Dick 2009) and include the following key elements: Existing land rights, including customary and communal rights, should be respected. Those who lose land should be compensated. Agricultural production

practices should be sound and sustainable and guard against depletion of soils, loss of critical biodiversity, or significant diversion of water from other human and environmental uses. When national food security is at risk (for instance, in case of an acute drought), domestic supplies should be given priority. Foreign investors should not have the right to export during an acute national food crisis. For protection of the local poor and for a conducive investment climate in this critical area, the code of conduct should be enforceable, not just voluntary. Foreign direct investment in agriculture is an opportunity, but it must not marginalize the poor or impose environmental damage.

## ***2: Policies to prevent extreme price volatility***

Staple foods can be viewed from different perspectives given different actors' roles in production, trading, and consumption. For farmers, they are an income source; for food processors they are an input; for traders and financial investors they are part of an asset in portfolios; and for poor consumers they are implicitly "currency," as they spend a large share of their income on them. The latter is the most neglected role. For the poor, grain price spikes mean hyperinflation in their currency, and they have no central bank that guards their currency. Food price volatility — unpredictable large swings in prices — affects the poor the most and undermines their health and nutrition. Extreme price volatility also hinders investment and leads to misallocation of resources. It increases the incentive to construct commodity asset portfolios, which foster speculative trading, further boosting price spikes.

In view of the adverse role of biofuels subsidy policies for food insecurity in times of tight grain supplies, these policies need to take food-security consequences explicitly into account, which they currently ignore. When food prices are high, subsidies for biofuel production should be frozen, reduced, or subjected to a temporary moratorium on biofuels from grains and oilseeds until extreme prices subside. Second-generation biofuel technologies are in the making but are still far from reality. If they are "smart," these technologies may partly overcome the food–fuel competition and lessen the negative effects on the poor.

Extreme price volatility is an international issue that requires international action. Together, national actions such as increasing grain stocks or restricting trade are inefficient and make global matters worse. These policy decisions—such as export restrictions which many countries have applied in the food crisis—often appear to be panic responses that give little attention to potential global market consequences. Food markets must not be excluded from the appropriate regulation of the banking and financial system, as the staple food and feed markets (grain and oilseeds) are closely connected to speculative activities in financial markets. There is growing evidence that the price formation at the main international commodity markets was significantly influenced by speculation that drove spot prices upward beyond market fundamentals (Robles, Torero, and von Braun 2009). To prevent extreme volatility, it is essential to ensure open trade, and transparent, appropriately regulated market institutions. Closing down futures trading in commodity exchanges is not an appropriate answer when price crises occur. But there is an institutional vacuum at the international level to address these matters. One set of actions calls for coordinated regulation, which does not require an organization. Another set of actions would require a new organization to fill the institutional vacuum—in other words, to act as the equivalent of the (missing) central bank that protects the currency of the poor (grains). Two sets of measures are proposed here:

1. **Better regulation.** The deregulation of commodity markets in the past decade went too far and contributed to the high economic costs of volatility mentioned earlier. Regulation should curb excessive speculation in food commodities—that is, futures trading needs to be more transparent (providing information on actors and transactions), and costs of speculation should increase when prices spike (through, for example, capital deposit regulations that increase at times of spikes for non-commercial and index trading but can be insignificant under normal market situations). Simply excluding food from speculative futures markets would be wrong, because these activities also play a useful intelligence role in identifying prices.
2. **Institutional innovation.** Global collective action for grain policy that enhances food security is needed to overcome the collective action failures in grain markets. The instruments should be composed of two elements:
  - First, an independent grain reserve (that includes other healthy foods) should be established exclusively for emergency response and humanitarian assistance. Such a reserve managed by the World Food Programme (WFP) could be handled in a decentralized way and backed by an international agreement that assures free movement of grains to address food emergencies at all times.
  - Second, an “International Grain Reserves Bank” should be established and tasked specifically with protecting the currency of the poor—grain prices—from crisis-type spikes. It would be governed like an independent central bank and equipped with resources similar to those of a central bank: it would have a modest reserve shared by nations at the regional or global level and a financial fund that positions it as a potentially active market player. It would advise on market-oriented regulatory regimes. The size of the financial commitment must be significant enough to have a strong signal in the market (probably about US\$20 billion in reserve funds) (von Braun and Torero 2009). This arrangement would not imply an effective expenditure, because the resources needed would be promissory and not actual budget expenditures. This reserve bank concept is not a price stabilization fund, but it is an institutional tool for reducing risk and preventing large spikes that cause hunger and trade disruptions. Any cost–benefit assessment of these proposed regime-changing institutional actions need to consider the cost of action versus costs of inaction in three domains—the costs of human resources and suffering from the food crisis, the costs of losses from trade and the political disruptions as trade would remain more open under such a regime, and the costs from higher national grain stocks and excessive self-sufficiency investments.

The G20 should follow up. Regional policy bodies, such as the Association of Southeast Asian Nations (ASEAN), South Asian Association for Regional Cooperation (SARC), and African regional and sub-regional bodies have partly implemented joint reserve policies, which could be one step in the proposed direction. A regional set of arrangements, however, is suboptimal and may run into trust problems in regions with one or two dominating regional powers. A key role could be played by more open trade and stock release policies by India and China who both sit on large grain stocks. More trade liberalization in general and especially by these two nations could improve the global food security situation (Kumar, Roy, and Gulati 2010).

### ***3: Social protection and nutrition policies***

Actions related to agricultural production, trade, and reserves are necessary but not sufficient for overcoming the food and nutrition security crisis, which is not just an acute problem, but a chronic global one. Another set of public policies is required to address health and nutrition risks through social transfers and health services. Most of these actions are carried out by national governments, but international support for these investments is also needed, especially in the least-developed countries. Setting priorities in this area requires a sound metric for targeting actions and measuring progress. First, a focus should be put on lives saved and livelihoods improved (measured by reduced mortality and morbidity). Second, priority should be given to enhanced economic productivity, growth, and returns to investment (measured by human productivity and lifetime earnings). A framework that includes both of these very different concepts may be helpful for stimulating an informed policy discourse on priority setting. With that in mind, policy actions in three priority areas are called for: (1) expand social protection and child nutrition action to protect the basic nutrition of the most vulnerable; (2) take protective actions to mitigate short-term risks (such actions would include cash transfers, pension systems, and employment programs); and (3) adopt preventive health and nutrition interventions to avoid long-term negative consequences. Social safety nets not only ease poverty in the short term, but also enable growth by allowing poor households to create assets, protect their assets, and allocate resources to more risky but highly remunerative production activities. Since good nutrition is crucial for children's physical and cognitive development, as well as their productivity and earnings as adults, early childhood nutrition and school feeding programs should be strengthened and expanded to ensure universal coverage (Hoddinott et al. 2008). Interventions need to be developed and include the following options:

- ***Transfer actions.*** Programs transferring income to the poor in response to food crises have a long tradition, in particular as food price subsidies and rationing schemes. Often, however, they are ineffective and fail to reach the most food insecure. Of increased relevance are employment-related transfer programs, such as the Indian rural employment scheme, scaled up to the national level in the past decade. Cash transfer programs are increasingly common. These programs—which transfer cash to households partly on the condition that they meet certain requirements such as sending children to school and using preventive health services—have proven successful in reducing poverty in the short run (through cash transfers) and in the long run (through the human capital formation that they encourage). They work particularly well in countries with low school attendance and adequate schooling infrastructure. They are not magic, however—they do not work in every country, and alone they are not sufficient for reducing poverty sustainably. Early childhood nutrition actions should be connected to them where needed.
- ***Nutrition and health actions.*** Lack of energy is generally an issue only in highly food-insecure areas, but micronutrient malnutrition is much more widespread and pervasive. The core problems of low birth weight and early childhood undernutrition need primary attention in nutrition and health actions. One promising way to start is to identify gaps where existing programs are insufficient to reach needed coverage and impact. Communities with the highest concentration of poor and vulnerable can guide priority setting. While problems of insufficient and poor-quality food persist, changes in the

global environment are creating new nutritional issues such as the “nutrition transition”—a process by which globalization, urbanization, and changes in lifestyle are linked to excess caloric intake, poor-quality diets, and low physical activity, which together lead to rapid rises in obesity and chronic diseases even among the poor in developing countries. The main challenge for agriculture, health, and nutrition is thus to adapt to the changing environment and address the double burden of under- and overnutrition by maintaining adequate food supply while increasing the production of low-cost, high-quality foods to improve diet quality among the poor. There is still too little private sector engagement in food fortification and in child nutrition in developing countries with delivery of low-cost, healthy baby foods. New alliances among the private sector, nongovernmental organizations (NGOs), and the public sector alliances are needed in this field of action.

### Conclusions for G20-Actors

The food and nutrition security actions outlined here depend to varying degrees on three different actors: the private sector, civil society NGOs, and governments (including their international organizations). Among these three, the most promising developments since the beginning of the global food crisis in 2008 have been the initiatives and strategic positioning of the private sector actors. A noteworthy new private-sector initiative includes the New Vision for Agriculture (WEF 2011) with defined actions and follow-up. This initiative adopts a new strategic orientation for corporate strategies in food- and agriculture-related sectors. It goes far beyond corporate social responsibility toward “shared value” approaches (Porter and Kramer 2011), “social business” initiatives, and “inclusive business” aimed at including the poor as both clients and partners for food and nutrition improvement. NGOs and international foundations, such as the Bill and Melinda Gates Foundation, are important partners in many of these initiatives that reach new and promising scales.

Governments—especially in Brazil, China, Europe, India, and the United States—have also responded to the food crisis with increased investments, but net additions of resources for food and nutrition security have remained much less than pledged at G20 meetings in recent years and institutional reforms are slow, especially at global level. If we were to design a global governance system for agriculture, food, and nutrition today, it certainly would not look like the current one. The food crisis shocked the global players into action, and the response has largely consisted of attempts at better coordination. Now action is overdue on what a well-functioning future global institutional architecture of agriculture and food might look like and how it might be achieved. There are four key principles for sound global governance of agriculture and food and nutrition security: adherence to *legitimacy* with *accountability* (that is, the decision-making body has a legitimate basis and is accountable) and *effectiveness* (that is, the chosen governance structure is the most cost-effective option among alternatives in delivering the public goods). And given the fast-changing and uncertain nature of the drivers of global food and agriculture, such as climate change or food-related health risks, a third principle needs to be *inventiveness* (that is, the capacity to innovate and adapt to changing circumstances). The current governance system especially lacks accountability, effectiveness, and inventiveness.

Today, global governance does not only, and not even mainly happen through formal global organizations. It increasingly occurs through a complex global web of government networks,

where a collection of nation-states communicate through heads of state, ministers, parliamentarians, and the United Nations and where corporations and NGOs participate in various ways (Slaughter 2004). Such global webs already play key roles in some policy domains such as public health, crime prevention, and energy but not enough in areas of agriculture, food, and nutrition. An independent strategic body is needed to overcome the global governance vacuum related to food security. The above proposed International Grain Reserves Bank would be an important hub serving as a component of such a system.

Prioritization, sequencing, transparency, and accountability are crucial for successful implementation of agriculture, food and nutrition policy. More and better investment is needed, but this investment will make its full contribution only when the governance of agriculture, food and nutrition is strengthened at international and national levels. Trying to counter institutional failures mainly with investments in technical domains will not work. Especially for reducing global food price volatility appropriate regulation and investments in institutions is needed. Food and nutrition security need to be given high priority among the development issues on the agenda of the G20 summits.

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