

Food crisis, food production and poverty

ŠÁRKA GRÓFOVÁ, KAREL SRNEC

Institute of Tropics and Subtropics, Czech University of Life Sciences, Prague, Czech Republic

Abstract: There is a sufficient global potential to produce the food required to feed the world population on the global level. Despite this, the number of hungry people worldwide was 925 million in 2010. Developing countries account for 98% of the world undernourished people and have a prevalence of undernourishment of 16%. Food security increasingly depends on non-agricultural factors like energy, trade and finance. The negative economic and social impacts of food, energy and the global economic and financial crises showed the vulnerability to poverty. High and rising food prices further undermined the food security and threatened the livelihoods of the most vulnerable by decreasing their already limited purchasing power. The main step in reducing poverty and hunger in developing countries is to invest in agriculture and rural development. Scaled-up investments in social protection that focus on nutrition and health are also crucial for improving the lives of the poorest people.

Key words: agriculture, food prices, food production, population growth, poverty, undernourishment

Despite regional differences, the progress in reducing hunger remains slow. According to the IFPRI Global Hunger Index¹ Report 2010, since 1990, the world global score has declined by less than 25% (from 19.8 to 15.1). Most of this progress has been made in the Southeast Asia and Latin America and the Caribbean, which have lowered their Index scores by more than 40% over the past two decades. The Global Hunger Index scores, however, remain very high throughout much of the Sub-Saharan Africa, which has made the least progress in combating hunger, with only a 13% decline in its score since 1990. Of the nine countries that have seen the largest increase in their Index scores, eight are in the Sub-Saharan Africa, and the Democratic Republic of Congo's score has increased by an appalling 66%. Comoros followed by Burundi are the countries with the second and third highest Global Hunger Index increase – by 21 resp. 20% (IFPRI 2010).

Based on the recent estimates of the Food and Agriculture Organization of the United Nations (FAO, 2011), the number of hungry people worldwide is 925 million. Developing countries account for 98% of the

world undernourished people and have a prevalence of undernourishment of 16%. Most of the world's hungry people (62% of the total) live in Asia and the Pacific, the world's most populous region, followed by the Sub-Saharan Africa, home to 26% of the world's undernourished population.

There are sufficient possibilities for increasing the food production to feed the future world population. Producing the additional food needed to feed more than 9 billion people in 2050 will require a 9% expansion of arable land, a 14% increase in the cropping intensity and a 77% increase in yields. The expansion of arable land in the world will moreover come mainly from the Sub-Saharan Africa (25%) and Latin America (30%). Producing enough food does not mean that it will also be available to fulfil any preferred diet. Nor does it guarantee that all people will at all times have the physical and economic access to the sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life.

A threat is the lack of investment in agriculture to meet the future food demand. It has been calculated that additional investments in agriculture of at least

¹The GHI (Global Hunger Index) is a multidimensional approach to measuring hunger. It combines three equally weighted indicators: (1) the proportion of the undernourished as a percentage of the population (reflecting the share of the population with the insufficient dietary energy intake); (2) the prevalence of underweight in children under the age of five (indicating the proportion of children suffering from the weight loss); (3) the mortality rate of children under the age of five (partially reflecting the fatal synergy between the inadequate dietary intake and unhealthy environments). The index ranks countries on a 100-point scale, with 0 being the best score (no hunger) and 100 being the worst, though neither of these extremes is achieved in practice. The values less than 4.9 reflex a low hunger, the values between five and 9.9 reflex a moderate hunger, the values between 10 and 19.9 indicate a serious problem, the values between 20 and 29.9 are alarming, and the values of 30 or higher are extremely alarming.

USD 30 billion annually are needed in developing countries in the coming four decades. The current global food system is on an unsustainable track, which poses a large threat to the long-term global food security. The global food system needs to be transformed in order to secure the long-term food supply (Sjauw-Koen-Fa 2010).

The relative neglect of agriculture in many developing countries over the past decades has prevented the food supply from keeping up with the increased food demand that has resulted from a growing world population and the changing consumption patterns. Food insecurity also increased more once the countries began to rely on the external food supplies. The prices of basic grains and other essential food products have become more volatile not only because of more frequent droughts and floods, but also because of the increasing influence of financial speculation in the commodity markets. Policies encouraging the production of bio-fuels as a response to the threat of climate change have also affected the food availability and food prices and have become a new driver of the food insecurity for the poor. Poverty eradication objectives thus pose a challenge to achieving an adequate level of international coherence in food policies (UN-DESA 2010).

WORLD POVERTY

According to the (UN-DESA 2010), using the international poverty line of \$1.25 per person per day in 2005 purchasing power parities (PPPs), as defined by the World Bank, 1.4 billion people, representing about 26% of the developing world's population, lived in poverty in 2005 (Table 1). There are, however, large regional variations in the poverty trends. The incidence of poverty is still highest in the Sub-Saharan Africa, where more than half of the population (50.4%) was found to be poor in 2005. Poverty remains also deep in the South Asia, where 40.3% of the popula-

tion remained below the poverty line in 2005. By contrast, in the East Asia and the Pacific, the rate of poverty was 17.9%; and in the Latin America and the Caribbean, it was even lower (8.2%). The existence of the persistent widespread poverty should not obscure the fact that there has been a significant achievement in the poverty reduction during the past few decades.

For example, the total number of poor (according to the definition above) had been 1.8 billion in 1990 and 1.9 billion in 1981 (compared with 1.4 billion in 2005). However, these numbers mask the actual progress achieved: the fact that the total size of the population also increased significantly during the same time span means that the share of the poor in the total population has decreased sharply. For the developing world as a whole, the incidence of poverty dropped from 52.0% in 1981 to 24.7% in 2005.

The dramatic drop in poverty levels has been attributed to, inter alia; the improved rates of economic performance and higher wages, as well as the provision of social protection systems. Unfortunately, in the context of the current global economic and financial crisis, which is slowing down the rates of economic growth, faster rates of the population growth in developing countries without the commensurate increases in the productive employment and with a lack of the comprehensive social protection have exacerbated the declines in the real per capita incomes and have thus contributed to a rise in the number of poor persons.

The total number of the poor in 2005 increased to 2.6 billion when an income threshold of \$2.00 per day is used, which indicates that there were 1.2 billion people with an income per capita of between \$1.25 and \$2.00 per day and that, using the \$2-a-day poverty line, almost half (47.6%) of the population in developing countries would be considered poor.

Poverty and inequality are closely related, and inequality appears to have been on the rise worldwide in the recent decades at both national and international levels. More than 80% of the world population lives in the countries where income differentials are

Table 1. Number of people with income of less than 1.25 USD per day

	1996	1999	2002	2005
East Asia and Pacific	622.31	635.06	506.83	316.21
Europe and Central Asia	21.76	24.28	21.73	17.29
Latin America and the Caribbean	53.07	55.29	56.59	45.25
Middle East and North Africa	10.58	11.54	10.3	10.99
South Asia	594.42	588.92	615.86	595.58
Sub-Saharan Africa	355.57	382.66	389.76	388.38
Total	1 697.74	1 697.74	1 601.07	1 373.69

Source: World Bank – PovcalNet (2010)

widening. The poorest 40% of the world population account for only 5% of the global income. On the other hand, the richest 20% account for 75% of the world income (UN 2010).

As it was stated at the World Summit for Social Development 2006, poverty is not simply a lack of an adequate income. It is a multidimensional phenomenon. It is a condition characterized by a severe deprivation of the basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information. It depends not only on income but also on the access to services. It includes a lack of income and productive resources to ensure sustainable livelihoods; hunger and malnutrition; ill health; limited Access or the lack of access to education and other basic services; increased morbidity and mortality from illness; homelessness and inadequate housing; unsafe environments and social discrimination and exclusion. It is also characterized by the lack of participation in the decision making and in the civil, social and cultural life. It occurs in all countries: as the mass

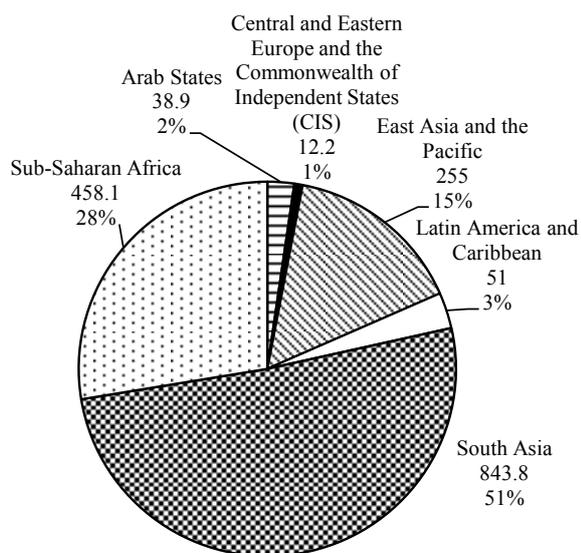
poverty in many developing countries, the pockets of poverty amid the wealth in developed countries, the loss of livelihoods as a result of economic recession, a sudden poverty as a result of disaster or conflict, the poverty of low-wage workers, and the utter destitution of people who fall outside the family support systems, social institutions and safety nets.

It is important when articulating the goal of eradicating the global poverty to distinguish between the different causes of poverty. A useful distinction may be the following:

- poverty caused by external agents
- poverty caused by natural forces (droughts, floods, handicaps, etc.)
- and poverty brought about by the agents themselves (Gilbert 2004)

Based on the (UNDP, 2010), about a third of the population in 104 countries covered in the Multidimensional Poverty Index (MPI)², or almost 1.75 billion people experience the multidimensional poverty. (These numbers exceed the 1.44 billion

Population of 104 countries by regions (millions)



Distribution of the MPI poor people by region (millions)

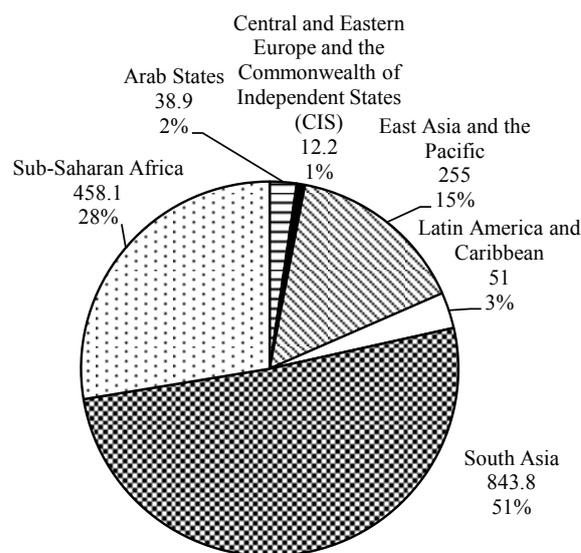


Figure 1. Distribution of the MPI poor vs. total population

Note: A total of 5.2 billion people in 104 developing countries are considered, about 78.5% of the total world population estimated in 2007

Source: Alkire and Santos (2011)

²The Oxford Poverty and Human Development Initiative (OPHI) of the Oxford University and the Human Development Report Office of the United Nations Development Programme (UNDP) launched in July 2010 a new poverty measure that gives a “multidimensional” picture of people living in poverty which its creators say could help targeting the development resources more effectively. The MPI, simple and policy relevant, complements the monetary-based methods by taking a broader approach. It identifies the overlapping deprivations at the household level across the same three dimensions (health, education and living standards – which are reflected in 10 indicators, each with equal weight within its dimension) and show the average number of poor people and deprivations with which poor households contend.

people estimated to be living on less than \$1.25 a day in the same countries, but it is below the 2.6 billion people estimated to be living on less than \$2 a day). More than half live in South Asia; the second highest rates are in the Sub-Saharan Africa, with a significant variation across regions, groups and indigenous peoples (Figure 1).

Food price crisis and the consequences for the worlds poorest

The World Bank³ estimates suggest that an additional 44 million people may have fallen into poverty in the low and middle income countries due to the rise in food prices since June 2010. Net producers of food benefit from higher prices while net consumers suffer. This reflects 68 million people who fell below the \$1.25 poverty line and the 24 million net food producers who were able to escape the extreme poverty (World Bank 2011).

Payment ability of the heavily indebted countries – and that both the least and middle developed ones – is developing in a very unfavourable way. There has not occurred any decisive change in the payment ability trend, since the tendencies of the foreign trade development have not changed in any decisive way and the debt service has then been slightly relieved for the poorest countries, but not to such an extent that it would have abolished the basic trend. In average, the payment ability has further worsened for the whole developing world (Jeníček 2010a).

Global food prices continue to rise (Figure 2). A variety of factors has led to this upward price spiral. The underlying structural factors include sharply increased use of cereals and vegetable oils in the production of bio-fuels, high prices for energy and fertilizers, the continuing depreciation of the US dollar, and the declining global stocks of food grains due to the changes of the buffer stock policies in the US and the European Union. Among these, the most important was the large increase in the bio-fuels production in the US and the EU, in response to the policies that subsidized the production of bio-fuels, restricted their imports and mandated their use. Back-to back droughts in Australia and the growing global demand for grains (excluding that for the bio-fuel production) have been modest contributors, and on their own they would not have led to the large price increases. Commodity investors and the hedge fund activity also seem to have played a minor role. Although the empirical evidence is scarce, the prevailing consensus among market analysts is that the fundamentals and policy decisions are the key drivers of the food price rises, rather than the speculative activity.

The effects of these underlying structural factors have been sharpened by the counterproductive policies adopted by the key exporters and importers. Export restrictions and bans – such as those imposed by India, China and Vietnam on rice, or by Argentina, Kazakhstan, and Russia on wheat – have restricted the global supply and aggravated shortages. Export bans and restrictions, in particular, reduce the confidence in the international grain markets, while sending a

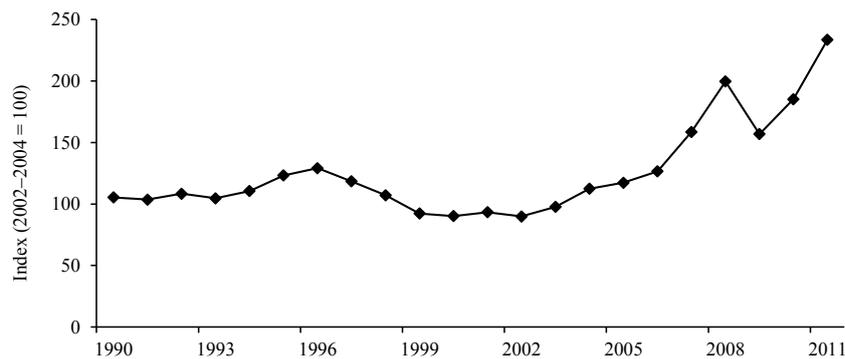


Figure 2. Food price index

Source: <http://www.fao.org/worldfoodsituation/wfs-home/foodpricesindex/en/>

³To quantify the poverty impacts of the recent rise in food prices, there was used a global computable model (Global Trade Analysis Project – GTAP) with a sample of 28 household surveys with data on the individual households’ expenditures and income sources. These national surveys were drawn from the low and middle income regions from around the world and represent 41% of the population living in these countries. There were used the local food price changes for the commodities with data for the June–December 2010 period.

signal to others to hoard or build up strategic reserves. The latter occurs not just at the state level, but at every stage of the supply chain as the participants (including even small farmers and urban consumers) become convinced that it is in their interest to hold the physical grain stocks. Driven by the expectations that some consumers will buy at any price, these restrictions have contributed to sharp price spikes, both in the global and national markets, in the recent years (World Bank Institute 2010).

The economic and food crisis will negatively affect large segments of the population in many developing countries. The position of those who were hurt most by the higher food prices (the rural landless, female-headed households and the urban poor) is particularly precarious because they have already approached, or in many cases reached, the limit of their ability to cope during the food crisis. Among these groups, the urban poor may experience the most severe problems because a lower export demand and the reduced foreign direct investments are more likely to cause the employment to fall in urban areas, which are more closely connected to the world markets than the rural areas. But rural areas will not be spared – the reductions in employment have caused a back-migration from urban to rural areas, forcing the rural poor to share the burden in many cases. Faced with the crisis, households are forced to find ways to cope (FAO 2009) (Table 2).

Nutritional setbacks are particularly severe for infants between the ages of zero and two as well as pregnant women. The complex linkages across food markets also affect obesity – for instance, the increased demand for high fructose corn syrup, as

a substitute for the more expensive sugar, has the public policy implications in a country like Mexico, where obesity is a serious public health concern (World Bank 2010).

Higher prices also create pressures to pull children out of school, although the countervailing effects also exist. Schooling imposes explicit and implicit costs on the households, such as fees, transportation, and uniforms, so that when the households become poorer, they may not be able to afford the costs and therefore withdraw their students from school. The same economic circumstances that cause the increased poverty, however, sometimes decrease wages and thus the opportunity costs of children staying in school. Their impact on schooling thus depends on the balance of these effects and will vary from a setting to a setting. In general, the poorer the country, the more likely an economic shock will lead to the adverse school impacts (World Bank 2008).

World food production – current state and global outlook

Growth in the global food production index (measured in constant prices) slowed to about 0.6% in 2009, following significant increases of 2.6 and 3.8% respectively in 2007 and 2008 – during the food price crisis. The growth of only 0.8% was projected for 2010. The global food consumption, which had been increasing at over 2% per year (almost 1% in per capita terms), fell marginally in the per capita terms during the economic recession in 2009. The growth in trade had been around the 4–6% range annually

Table 2. Coping mechanisms in time of crisis – how households respond to declines in income

	Actions	Costs
New economic activities	Increased participation in income-generating activities (especially women)	Reduced leisure or other activities; maternal care, nutrition, education may suffer
	Migration to areas where there are job opportunities	Loss of community cohesion, break-up of family
	Return migration to village/country of origin	Reduced wages in local labour markets
Consumption smoothing	Sale of assets	Loss of future earning potential, possible poverty trap
	Borrowing from formal/informal markets	Reduced future earning potential, increased risks
Change in consumption patterns	Shifting dietary patterns towards cheaper (starchy) foods and away from micronutrient-rich foods such as milk, meat, fruits and vegetables	May cause malnutrition and micronutrient deficiencies with serious health consequences
	Reduced expenditures on health, education, durable and semi-durable goods to maintain expenditure on food	May negatively affect health of household members and jeopardize future earning potential

Source: FAO 2009

before the financial crisis; in 2009, it contracted and remained negative in 2010 (FAO 2011).

The world food production (Figure 3) on the global level has increased substantially in the past decades, in the same way as the calorie intake per capita. However, in spite of a decrease in the proportion of the undernourished people, there will be still need for the production growth, according to a growing number of the world's population.

The UN (2010) indicates that by 2050, the world population is projected to surpass 9 billion, with developing countries accounting for most of the 2.3 billion increase. The population of the developing world is expected to rise from 5.6 billion in 2009 to 7.9 billion in 2050. In contrast, the population of the developed regions is expected to increase slightly, from 1.23 billion to 1.28 billion. The world will also undergo a rapid urbanization in the decades ahead. Approximately 70% of the world population will live in urban areas by 2050, compared to the current level of roughly 50%.

According to the long-term FAO projection (Sjauw-Koen-Fa 2010), the global average daily caloric intake could rise by approximately 10% in comparison to 2003/2005 levels to 3050 kcal per person per day in 2050. It was calculated that food consumption will increase in average by 1.9% per annum in the period (2005–2050). Taking into account the expected population growth and the changes in diet, the world agricultural production would need to increase by some 70% (nearly doubling in developing countries). This would entail producing by 110% more cereals, by 135% more meat and by 140% more soybeans in comparison to the current production. The future growth in agricultural production is not expected to follow the path of the projected growth in the world population and dietary changes. The annual crop

production growth will slow down from 2.2% per annum (1997–2007) to 1.3% per annum during the period (2005/07)–2030 and 0.8% per annum during the period 2030–2050. In developing countries, this figure will decrease from 2.9 to 1.5 and 0.9% per annum during these respective periods.

The world has a scarcity of the vital natural resources such as fertile land, clean water, nutrients and a number of non-renewable raw materials/metals. The existing natural resources are also not equally distributed among the countries.

Compared to the developed countries, the rate of agricultural and namely arable land per 1 inhabitant in developing countries is very low. Its values reach 0.64 ha of agricultural land, resp. 0.16 ha of arable land per 1 inhabitant, while in the developed countries; it is 1.40 ha of agricultural, resp. 0.47 ha of arable land. Moreover, developed economies reach, compared to the developing countries, higher values of per hectare of agricultural, resp. arable land output (Jeníček 2010b).

An additional food production to meet the growing and changing food demand also does not mean that everyone on the planet will have the access to food. Hunger and malnutrition will not be eradicated automatically. What is more, the increasing production will be able to provide a sufficient availability of the basic food in the world, but it will not be able to ensure a sufficient availability of all the foods needed to satisfy the consumer demand owing to the different functions of food.

These new pressures will place an additional burden on the food security of the most vulnerable groups – the poorest and hungry people, who typically belong to the socially excluded groups, have few assets, and live in remote rural areas with little access to roads, markets, education, and health a growing number of

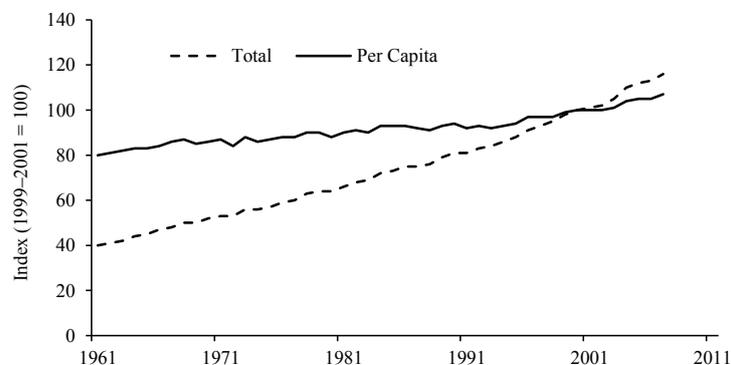


Figure 3. Food production index

Source: Food and Agriculture Organization Statistical Database 2011

consumers with middle and higher incomes in developing countries will increase both their consumption of meat and dairy products and of fruits, vegetables and processed and fast foods. As a result, rice consumption is expected to decline in favour of wheat, both directly in the wheat-based bakery products and indirectly via the meat consumption. From the sustainability perspective, the greatest challenge will be the expected steep rise in the demand for animal proteins, including dairy, eggs and fish. A multiple quantity of plant products is required to produce one quantity unit of an animal product. This means that a substantial amount of scarce land, water and fertilizer will be used to produce the animal products required to meet the forecast future animal protein demand (Sjaauw-Koen-Fa 2010).

Sustainable food production and supply key priorities are:

- Enhance production and productivity of crops, farmed animals and fish while minimizing losses and adverse environmental impacts, maintaining high standards of animal welfare and maintaining essential ecosystem services. In particular:
 - increase crop yields and the resilience of yields, through genetic improvement, better crop management and maintaining healthy soils.
 - reduce greenhouse gas emissions from ruminant livestock through enhanced understanding of their biological processes, leading to improved management practices in agriculture.
 - develop sustainable approaches to fish farming, including sustainable sources of fish feed and management of pests and diseases.
 - minimize pre- and post-harvest losses of crops, farmed animals and fish to biotic and abiotic factors.
- Improve understanding of the attitudes and behaviours driving current methods of food production and supply (including associated waste), with a view to better understand how to embed more sustainable practices in the short and long term throughout the food production and supply system (BBSRC 2011).

CONCLUSION

Ensuring food security in the face of the rapidly rising food prices requires a combination of effective safety nets and improving agricultural productivity. Adjusting to higher fuel prices will require a combination of the efficient energy use and diversification away from the traditional fossil fuels. Agriculture faces the challenge of continuing to feed an increas-

ingly affluent world population at affordable prices, while also generating income for the millions who depend on it as a livelihood. It faces the challenge of adapting to the climate change while mitigating its own contribution to it. It must produce more, while using fewer natural resources. The challenges are formidable. But the opportunities are robust enough to meet them.

Agriculture can make substantial contributions to economic development and poverty alleviation in the least-developed countries. Even though this role is reduced substantially in the middle-income countries, agriculture continues to play a crucial role in alleviating poverty, which remains disproportionately rural in spite of the falling relative importance of agriculture in national economies. To fulfil its role as an engine of growth and poverty alleviation, however, agriculture itself needs to grow. And agricultural growth cannot be achieved and sustained without investing in agriculture. Unfortunately, in countries where the socio-economic role of agriculture is largest, public investment in agriculture tends to be relatively very low. Public investment in agriculture as a percentage of agricultural GDP is the lowest in agriculture-based economies (around 4%) and largest in urbanized developing countries (around 15%).

It is, therefore, important that, during and following economic crises, that investment in agriculture receives a decisive support from both the private and public sectors. For investments in agriculture to fully materialize, a business environment that promotes a private, domestic and foreign investment not only into agriculture but also into all other sectors needs to be in place. Such an environment includes respect for the rule of law, good governance and macroeconomic stability.

The effective social protection, education, and nutrition responses are needed to ensure that the rising food and fuel prices do not have lasting impacts on the human and physical capital of the poor. These responses must be based on a careful country-specific diagnostics as some areas and groups within a country have been affected much more than others. Countries also differ widely in their capacity to respond to the crisis, with some countries operating safety net, education, and nutrition programs that can be scaled up quickly while the others do not. Monitoring key health and nutritional indicators is an essential part of devising an appropriate response. Tracking prices and the household intake and investing in the nutritional surveillance systems are essential for knowing where and to whom the interventions should be targeted. Key indicators to be monitored include the dietary diversity, child underweight and

haemoglobin levels, and the maternal body mass index and vitamin A status.

Specific interventions are needed to prevent the school drop-outs and to help students who have dropped out to get back into school. Social protection and demand-side transfers can help to reduce the pressures to pull children out of school by protecting the household incomes and/or reducing schooling costs. Effective health and nutrition interventions are also needed to complement the social protection programs. For countries with a limited capacity and financial resources, the provision of targeted food supplements and micronutrients may be the most effective short-run nutrition interventions. Such interventions are usually affordable at scale because of their low cost per head and they can easily be added to the existing health programs and school feeding programs, which are one of the few safety net programs in place in many low-capacity countries.

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Contact address:

Šárka Grófová, Czech University of Life Sciences Prague, Kamýcká 129, 165 21 Prague 6, Czech Republic
e-mail: sarka.grofova@volny.cz
