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Food (In)Security in Urban Populations

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Abstract

The food crisis at the end of the last decade and the resulting food riots that occurred in cities all over the world exposed the vulnerability and fragility of the current global food system and highlighted the increasing problem of urban food security. Urban households were among the hardest hit by the food and economic crises as they saw their purchasing power decline drastically. Though aggregate world food availability was relatively good during this period, access to that food by the urban poor had been severely compromised. This working paper aims to analyse the factors that influence urban food security and argues the case for why an urban focus will increasingly matter in the international discourse on food security. A truly “systems approach” will be needed to study and deal with the many inter-related factors and players in food security. Too often have professional communities maintained disciplinary barriers when addressing such complex problems.

Biographies

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This Policy Series presents papers in a preliminary form and serves to stimulate comment and discussion. The views expressed are entirely the author's own and not that of the RSIS Centre for Non-Traditional Security (NTS) Studies. The paper is the result of research conducted under the Asia Security Initiative programme on internal challenges supported by the MacArthur Foundation. Visit www.asicluster3.com to find out more about this initiative. More information on the work of the RSIS Centre for NTS Studies can be found at www.rsis.edu.sg/nts.

1. Introduction

The recent food and economic crises of 2007–2009 saw protests and demonstrations taking place in at least 43 countries, almost all of them occurring in urban areas. Many of the protests turned violent notably in Burkina Faso, Cameroon, Ivory Coast, Egypt, Guinea, Haiti, Honduras, Indonesia, Kenya, Malaysia, Mauritania, Morocco, Mozambique, Pakistan, Russia, Senegal, Thailand, Tunisia and Yemen. These disturbing events have highlighted the increasing problem of urban food security in many countries and have brought to light the fact that urban poverty and urban food security need just as much attention from the international community as its rural counterparts. According to the Food and Agriculture Organization (FAO) of the United Nations, urban households were among the hardest hit by the food crisis as they saw their purchasing power decline drastically while they had very limited capacity to produce their own food. Though aggregate world food availability was relatively good in 2008 and 2009, access to that food by the urban poor had been severely compromised.

Regrettably, the situation described above may still get worse. Current food prices remain higher than their pre-spike levels and could still go back up. Further, none of the underlying agricultural problems which produced the sharp increases in food prices and increased the number of hungry over the past decade have gone away. Competition for land, an increasing demand from emerging economies, a rising global and more urbanised population together with climate change, falling water availability, rising energy costs and resource scarcity trends represent a daunting challenge for the global community. This paper aims to analyse the factors affecting food security in general and urban food security in particular, and makes the case for why an urban focus will increasingly matter in the international discourse on food security.

2. Century of Cities

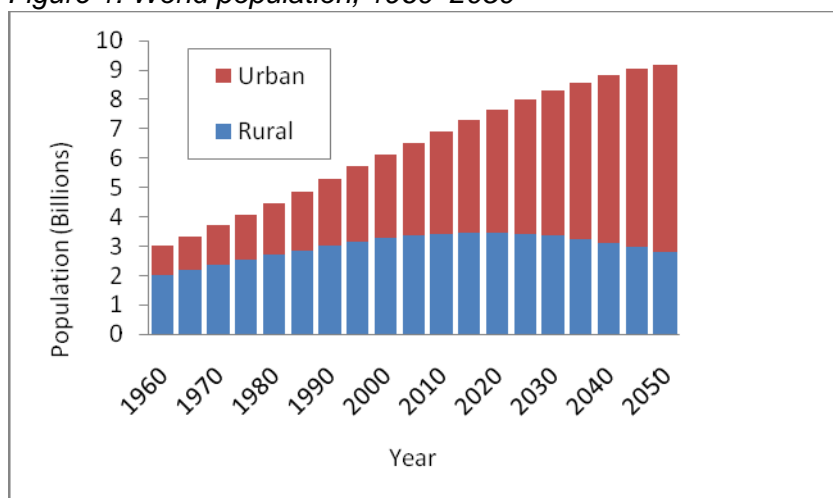
According to UN-HABITAT, the UN agency for human settlements, the 21st century will be the century of urbanisation.¹ The year 2008 saw, for the first time in history, the world's urban population overtake its rural population (see Figure 1). The majority of the global human population is now residing in cities, with all the accompanying effects and consequences, particularly on food consumption patterns. In Latin America and the Caribbean, 75 per cent of the population live in cities; this figure will climb to 83 per cent by 2030. Comparable figures for Asia and the Pacific are 37 and 53 per cent; for Africa, 38 and 55 per cent.² It is projected that by 2050, two-thirds of humanity or 6 billion people will be living in towns and cities compared to only 32 per cent in 1960. In 2025, more than a dozen urban agglomerations will have over 20 million inhabitants and some will even have as much as 30 million. Twenty-three of the 25 largest urban agglomerations will be in the developing countries of Africa, Asia and Latin America. Suffice to say, the scale and pace of this migration is creating unprecedented social, political, cultural and environmental challenges. Food security, defined by the FAO as existing when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food, will be just one among the many challenges of this new "century of cities". Supplying urban inhabitants not only with sufficient, but also more importantly, affordable food will put an enormous strain on the food supply and distribution chain. An insidious phenomenon related to the rural to urban migration in countries like China is the transformation of farming skills and knowledge as

¹ Tibaijuka, 2008

² Argenti, 2002

most workers who migrate to the cities are male and recent surveys have shown that most farming in the countryside is now done by females who make up 78 per cent of the head of households.³

Figure 1: World population, 1960–2050



Source: FAOSTAT, 2008

One predictable outcome of this massive population shift is urban poverty. While most of the world's poor still currently live in rural areas, the numbers of the urban poor are substantial and continue to grow at an alarming rate. World population is expected to grow from its current 6.8 billion to 9.2 billion by 2050. Virtually all of this population growth will take place in the urban areas of developing countries thus shifting the locus of poverty to cities. Most of the current growth is already being absorbed into life-threatening slums.⁴ In 1993, there were 1.3 billion people living in extreme poverty⁵, of which 19 per cent, or 242 million people, lived in urban areas. By 2002, though the population in extreme poverty declined to 1.2 billion people, the urban share increased to 25 per cent, and the number of poor urban residents had increased to 292 million.⁶ The “absolute number” of slum dwellers has actually increased from 776.7 million in 2000 to some 827.6 million in 2010.⁷ This means that 55 million new slum dwellers have been added to the global urban population since 2000.

3. Food and the Urban Environment

With regard to food, the urban environment presents several challenges that differentiate it from the countryside. First, urban residents have to purchase almost all of their food as well as other goods and services, including housing, transportation, healthcare and education.⁸ Therefore, food security in cities depends to a large extent on individual household circumstances as the household operates within this purchasing environment. Studies by the International Food Policy Research Institute (IFPRI) and others show the extent of the vulnerability of the urban poor. Based on data from 20 developing countries, the study found that the budget share devoted to food in extremely poor urban households ranged from 48

³ Song et al., 2009

⁴ Tibaijuka, 2008

⁵ on less than US \$1 per day

⁶ Ravallion et al., 2007

⁷ UN-HABITAT, 2010

⁸ Cohen and Garrett, 2009

per cent in Guatemala to 74 per cent in Tajikistan; in 18 of the 20 countries, households allocated more than half their budgets to food.⁹ Similarly, Redwood (2008) found that poor residents in Dar es Salaam, Tanzania, devoted 85 per cent of their income to food, while those in Bangkok, Thailand, and Kinshasa in the Democratic Republic of Congo spent 60 per cent.

Second, because of increased incomes, urban areas see a higher consumption of more expensive sources of nutrients such as meat, fruit and vegetables, and a lower consumption of staples such as cereals. Specific impacts of urbanisation, however, still differ from one region to another. For example, an empirical study¹⁰ using 1960–1988 data shows that urbanisation leads to significantly reduced urban demand for cereals such as rice in higher income Asian countries but it may actually increase rice consumption in sub-Saharan Africa.

Third, because of the shift from staples such as sorghum, millet, maize and root crops to rice and wheat (often processed into bread) in urban areas, the urban poor may be more vulnerable than their rural counterparts to variations in the international market since rice and wheat, along with maize, tend to be internationally traded items. In addition, urban residents are also vulnerable to global economic events since many of them depend on overseas remittances, exports, employment and Foreign Direct Investment as was seen during the most recent economic downturn.

Fourth, urban areas typically offer residents a wider choice of foods including produce from foreign cultures than do rural areas. Some argue that as countries become more developed and given the trend towards globalisation, there is a tendency for dietary structure to become increasingly similar across similarly developed countries.¹¹ This is facilitated by multinational food processing and distribution industries that operate globally. The emergence of US-style fast food restaurants has greatly affected food consumption patterns in these countries.

Fifth, urban areas have also seen a “supermarket revolution”. Supermarkets (i.e., all modern retail businesses, including chain stores and convenience and neighbourhood stores) have now gone beyond the initial middle- and upper-class clientele in many countries to reach the mass market. They are displacing traditional retailers in many countries in Africa, Asia and Latin America. According to Reardon and Berdegué (2007), in Argentina, Brazil, Chile, Colombia, Costa Rica and Mexico, supermarkets now account for 45 to 75 per cent of food retailing. In the rest of Latin America, where it is largely lower-income and less urbanised, the share is 20 to 40 per cent. Supermarket sales in China, India and Vietnam are growing at 30 to 50 per cent a year.¹² Though supermarket chains will undoubtedly capture more of the retail share in the future, they may not be of immediate relevance to the urban poor who lack the cash to purchase in bulk. These people will continue to purchase food on a daily basis at small corner stores that may also offer credit.

Finally, because urban areas are centres of economic opportunity, there is a greater percentage of women working outside the home.¹³ Studies have indicated that increased opportunity cost of women’s time raises the demand for processed and fast food in many countries as such food requires less time for preparation. Kennedy and Reardon showed

⁹ Ahmed et al., 2007

¹⁰ Huang and David, 1993

¹¹ Regmi and Dyck, 2001

¹² Reardon and Gulati, 2008

¹³ Regmi and Dyck, 2001

that the demand for rice, a non-traditional imported product, has increased significantly in urban areas in West Africa since its processing and cooking costs are lower compared to traditional coarse grain cereals.¹⁴ Rice, particularly “fast-food” or street-vendor rice, has become very attractive, even to poor urban consumers. Similarly, the increased value of women’s time appears to be an important factor raising demand for bread in urban households in Kenya and in Sri Lanka.¹⁵

Reardon¹⁶ estimates that two-thirds to three-quarters of the food market in developing countries is today in urban areas and what happens in these urban food markets determines the markets farmers face. This market is growing five to seven times faster than OECD (Organisation for Economic Co-operation and Development) markets.

4. Factors Affecting Urban Food Security

The urban backdrop described above plus the underlying agricultural problems that farmers currently face, if not addressed, make for a “perfect storm” that could drive the urban poor further into food insecurity. Any crisis in the food supply, which could lead to higher food prices, will have detrimental effects on poor families in urban areas.¹⁷ Below is a list of such factors which impact on urban food security. Most, if not all, were influential at varying degrees in driving up food prices during the recent crisis. They fall under two categories: those factors that lead to a transitory or seasonal type of food insecurity and those that lead to a more chronic or “normalised” type of food insecurity. The former may afflict any household regardless of whether it has a chronic problem or not. Crop failure, seasonal scarcities, rising prices, temporary illness or unemployment among the productive members of the household, or perhaps an emergency need for a large cash outlay, may all be reasons for the sudden reduction of a household’s access to food to below the nutritionally adequate level. Chronic food insecurity, on the other hand, occurs when a household is persistently unable to meet the food requirements of its members over a long period of time marked by continuous, temporary blips of good and bad moments.

4.1 Factors Affecting Transitory Food Insecurity

4.1.1. Weather disruptions and pest outbreaks

Natural calamities, extreme weather events (droughts, heat and cold waves, heavy storms and floods) and increasing irregularities in rainy season patterns (including flooding) have immediate impacts not only on food production, but also on the food distribution infrastructure, incidence of food emergencies, livelihood assets and opportunities, and human health in both rural and urban areas.

The recent six-year Australian drought that decimated local rice production and also savaged Australian wheat crops together with India’s poor 2007 wheat harvest due to drought and disease were contributing factors to the increase in food prices in 2007–2008.

Many pests that caused major problems for rice intensification programmes in the 1970s and 1980s have returned as major threats to production, primarily because of breakdowns in

¹⁴ Kennedy and Reardon, 1994

¹⁵ Senauer et al., 1986

¹⁶ Reardon, 2010

¹⁷ Mougeot, 2006

crop resistance and the excessive use of broad-spectrum, long-lasting (residual) insecticides that disrupt natural pest control mechanisms.¹⁸ A nasty epidemic of disease and pests struck Vietnam, the world's second-largest rice exporter after Thailand, sharply cutting supplies of this food, a staple for half the world, thereby contributing to the "rice shortage" crisis in 2008–2009.

4.1.2. Rising energy prices

The period before the food crisis saw a rapid increase in the cost of oil. The price of a barrel of petroleum in 1998 was US\$20 and by 2007, it reached a high of US\$90 per barrel. This massive increase in price had a direct impact on the price of nitrogen fertilisers of which natural gas is a key component. The world price of nitrogen fertilisers, which are essential for agricultural production, increased from US\$100/tonne in 1999 to US\$350/tonne in 2007. The increase in oil prices also doubled the cost of transportation and shipping which affected the ability of developing countries to import food. Together, these two phenomena had an enormous impact on the price of food in 2007–2009. Unfortunately, because of continued strong demand from emerging economies and possible supply issues, the price of crude oil will continue to fluctuate in the coming decade.

4.1.3. Competition from the energy sector

Many believe that the recent growth of the biofuel industry and its competition with food crops for available land heavily contributed to the food price hikes in 2007–2008. Biofuel production based on agricultural commodities increased more than threefold from 2000 to 2008. Various policy measures driving the rush to biofuels, as well as tax incentives and import restrictions in developed countries, have been the main driver of this development.¹⁹ These initiatives have been motivated by interest from the international community in mitigating climate change by reducing greenhouse gas emissions, enhancing energy security by reducing dependence on imported oil and supporting farmers by increasing demand for the crops they produce.

Though the boom in biofuel production has had limited impact on energy security (biofuel only accounts for 1.5 per cent of total road transport fuel and 0.2 per cent of total energy consumption), it has already had significant impacts on agricultural markets and food security. Biofuels account for about 7 per cent of global coarse grain use (rising to 12 per cent by 2018), 9 per cent of global vegetable oil use (rising to 20 per cent by 2018), and 2 per cent of global cropland (rising to 4 per cent by 2030²⁰). As such, they have contributed both to the increase in agricultural commodity prices and to the expectation that prices will remain higher in the future than they would be in the absence of increased biofuel production.

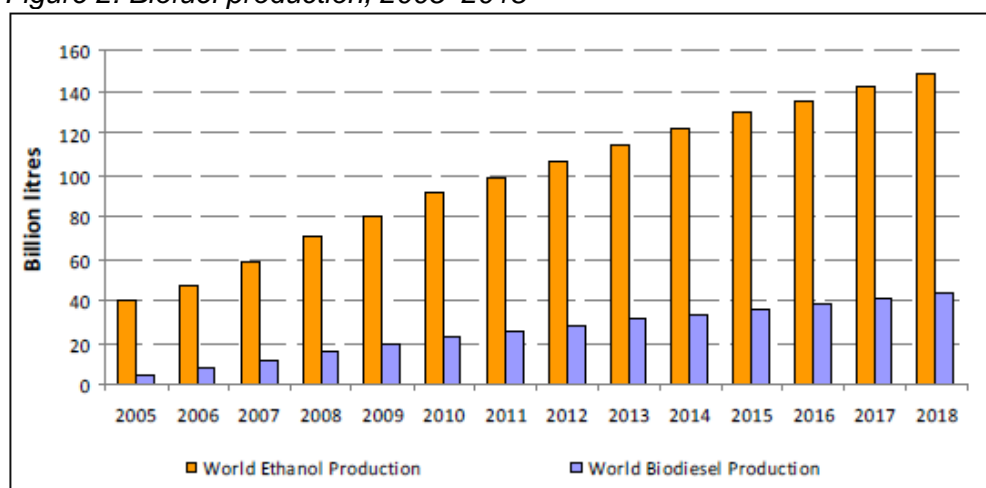
As it stands, global biofuel production is projected to increase to 192 billion litres by 2018 from just over 100 billion litres at present (see Figure 2). Accordingly, the demand for agricultural commodities used for feed (sugar, maize and oilseeds) for liquid biofuels is expected to continue its growth over the next decade and perhaps beyond, putting more pressure on food prices. Without biofuels, much of the increase in cereal demand will be for animal feed to support the growing consumption of livestock products.

¹⁸ IRRI, 2008

¹⁹ FAO, 2009a

²⁰ Ibid.

Figure 2: Biofuel production, 2005–2018



Source: OECD-FAO Agricultural Outlook 2009–2018

4.1.4. Policy changes

Domestic policy responses in developing countries such as the ones seen during the recent crisis similarly have an enormous effect on food prices. Because of the concern over the impact of higher rice prices, major exporting countries such as India and Vietnam moved to impose export restrictions to protect their domestic consumers while importing countries especially the Philippines started to panic buy and scramble for supplies. Fears of shortages spread and a cumulative price spiral started that fed on the fear itself.²¹

Another example of policy changes that contributed to the spike in food prices was the strong support given by some European countries and the United States to the biofuel industry through tax breaks, mandated use and subsidies. These policies have had the unintended consequence of diverting resources from food production and have caused distortions of supply and demand.

4.1.5. Lower holdings of international cereal stocks

In the lead-up to the crisis, world grain reserves were at their lowest levels since records were first kept back in 1960, with the US stockpile at its lowest since 1948. Basically, the world was consuming more food than it was producing. A major reason for the imbalance between the long-term demand and supply is the slowing growth in yield for the major commodities, which has decreased substantially over the past 10 to 15 years in most countries. In particular, the growth rates of cereal yields have been falling since the Green Revolution years, dropping from 3.2 per cent per year in 1960 to 1.5 per cent in 2000. To what degree lower cereal stocks contributed to the price increases seen in 2007–2008 is still subject to debate as some argue the declines in stock-to-use ratios for the world (excluding China) were much less rapid and the ratios did not reach particularly low levels before, or even during, the world food crisis. It could also have been that it was the perception of low

²¹ Timmer, 2010

stocks that contributed to the price increases especially as low stock levels had been widely reported.²²

4.1.6 Diversion from staple crops to cash crops

Alarm bells have been raised in China on the reduction in plantings of traditional staple crops such as rice and wheat, and the related increase in cash crops such as citrus for economic reasons. This potentially has effects on the diet and nutritional health of rural households and may lead to a dependency on imports of substitute staples from other regions of the same country or from overseas. A study examining 25 years of FAO data on crop acreage in Africa found that in 2006, Africa cultivated more acres of inedible cash crops (37.3 million acres or 14.9 million hectares of coffee, cocoa, sugar, cotton, rubber, tobacco and tea combined) than most individual key African food staple crops such as yams, sweet potatoes, rice, wheat and cassava.²³ Since 1995, Africa added nearly three new acres of cocoa beans and cotton for every new acre of corn. For every two new acres of millet, Africa added nearly three new acres of cocoa beans and cotton. More recently, farmers in Kenya have abandoned growing staples such as maize and wheat in preference for faster-growing vegetables and passion fruits, partly due to ready markets overseas and related high returns. Finally, as already mentioned earlier, diversion of food crops to biofuel crops was a contributing factor to global food price hikes in 2007–2008.

4.2 Factors Affecting Chronic Food Insecurity

4.2.1 Demographics

Population Growth

Population growth is one of the main drivers of increasing food demand. Unfortunately, population growth continues to overtake food availability in many countries. For example, between 1985 and 1995, food production lagged behind population growth in 64 of 105 developing countries studied by FAO with Africa faring the worst. Food production per person fell in 31 of 46 African countries.

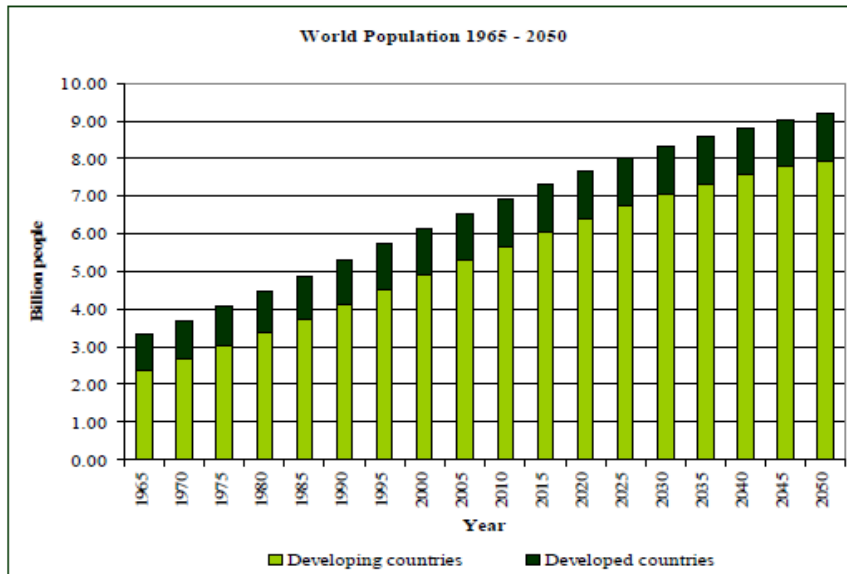
In 2000, the world's population was growing at a rate of 1.14 per cent (or about 75 million people) per year – down from a peak of 88 million per year in 1989. In the last few centuries, the number of people living on Earth has increased many times over. By 2000, there were 10 times as many people on Earth as there were 300 years ago. Currently, the world human population increases by an average of 220,980 people every day.

According to the latest estimates of the UN Population Division, global population is projected to grow by 34 per cent from 6.8 billion today to 9.2 billion in 2050 (see Figure 3). Though population growth rates will slow down considerably compared to the preceding 50 years, the absolute increase will still be significant; 2.3 billion more humans by mid-century. Nearly all of this population increase will take place in developing countries, particularly in Asia (see Figure 4).

²² Dawe, 2009

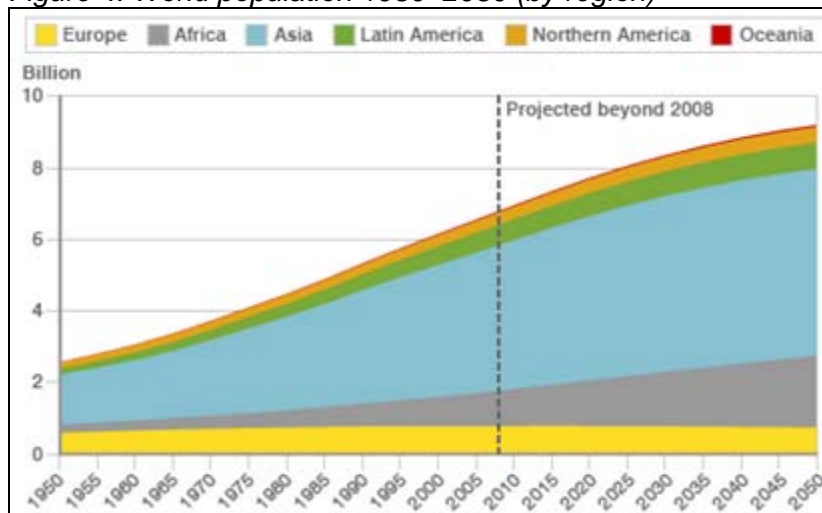
²³ Food and Water Watch, 2008

Figure 3: World population, 1965–2050



Source: United Nations Secretariat, 2007

Figure 4: World population 1950–2050 (by region)



Source: United Nations Secretariat, 2007

Urbanisation and Food Consumption Changes

Increasing urbanisation in combination with income growth has seen the acceleration of the diversification of diets in developing countries. One reason for this is the wider variety of foods available in cities compared with rural areas. Another is the increasing likelihood of employment of women in urban areas; as the opportunity cost of a woman's time rises, so will demand for foods that require less preparation time.²⁴ While the proportions of cereals and other staple crops have remained constant, there has been a significant increase in the demand for vegetables, fruits, meat, dairy and fish.

²⁴ USDA, 1997

Since the early 1960s, consumption of milk per capita in the developing countries has almost doubled, meat consumption more than tripled and egg consumption increased by a factor of five.²⁵ This has translated into considerable growth in global per capita intake of energy derived from livestock products albeit with significant regional differences. All regions with the exception of sub-Saharan Africa experienced increased consumption with the greatest increases occurring in East and Southeast Asia, and in Latin America and the Caribbean. China in particular has seen per capita consumption of meat quadruple from 13.7 kg/capita/year in 1980 to 59.5 kg/capita/year in 2005, consumption of milk increase tenfold from 2.3 kg/capita/year in 1980 to 23.2 kg/capita/year in 2005, and egg consumption increase eightfold from 2.5 kg/capita/year in 1980 to 20.2 kg/capita/year in 2005. Per capita consumption of livestock products in the rest of East and Southeast Asia has also grown significantly, particularly in the Democratic People's Republic of Korea, Malaysia and Vietnam.²⁶

Fish consumption has also undergone major changes in the past four decades. World per capita fish consumption has increased from an average of 9.9 kg in the 1960s to 16.4 kg in 2005.²⁷ However, this increase has not been uniform throughout the world. In the last three decades, per capita fish supply has remained almost static in sub-Saharan Africa. In contrast, it has risen dramatically in East Asia (mainly in China) and in the Near East/North Africa region. China has accounted for most of the world growth; its estimated share of world fish production increased from 21 per cent in 1994 to 35 per cent in 2005. If China is excluded, per capita fish consumption is about 14.0 kg, slightly higher than the average values of the mid-1990s, and lower than the maximum levels registered in the 1980s (14.6 kg). Preliminary estimates for 2006 indicate a slight increase in global per capita fish consumption to about 16.7 kg. Of the 107 million tonnes available for human consumption in 2005, Asia accounted for two-thirds of total consumption, of which 36.9 million tonnes was consumed outside China (13.9 kg per capita), with 33.6 million tonnes in China alone (26.1 kg per capita).

Similar trends have been observed for the consumption of fruits and vegetables. Between 1970 and 2000, the average worldwide consumption of vegetables increased from 60 kg to over 100 kg per person, but trends vary between countries and regions.²⁸ A low consumption of fruits and vegetables is a persistent phenomenon in many regions of the developing world, especially in Africa. On the other hand, China in particular has seen a tremendous growth in per capita vegetable supply from 45 kg in 1970 to 270 kg in 2005.²⁹

4.2.2 Underinvestment in rural infrastructure and agricultural innovation

There is empirical evidence that insufficient investment in agricultural production of developing countries can have a detrimental impact on their food security. The 1970s and 1980s saw the number of undernourished actually declining despite the world food crisis of 1973–75 and the rapid population growth during those decades. During this period, large investments were made in the agriculture sector (including amounts for scientific research, rural roads and irrigation) which led to rapid growth in cereal yields and lower cereal prices.

²⁵ FAO, 2009b

²⁶ Ibid.

²⁷ FAO, 2008

²⁸ WHO and FAO, 2002

²⁹ FAOSTAT

The proportion of official development assistance (ODA, i.e., development aid contributed by donor governments) devoted to agriculture was also relatively high.

In contrast, during the 1990s and the current decade, the number of undernourished has increased despite a slower population growth. During this same period, the proportion of ODA devoted to agriculture declined substantially; in 2007, the level of ODA was 37 per cent lower than in 1988. Yield growth rates, particularly for wheat and rice, have slowed down substantially. The increase in maize yield, on the other hand, can be attributed to the fact that a much greater proportion of research and development (R&D) for maize lies in the private sector compared with rice and wheat, and private R&D is taking on an increasingly large share of total R&D.

4.2.3 Climate change

Climate change, on balance, will do more harm than good to agriculture and forestry systems, particularly in developing countries. Although the countries in the South are not the main culprits of climate change, they may suffer the greatest share of the damage in the form of declining agricultural yields and greater frequency of extreme weather patterns (e.g., droughts and floods). It has been estimated that the aggregate negative impact of climate change on African agricultural output up to the 2080–2100 period could be between 15 and 30 per cent.³⁰ In Asia, climate change could disrupt normal monsoon patterns, possibly resulting in decreased agricultural productivity. On the positive side, higher average temperatures may lead to yield increases in higher latitude countries, mostly in the northern hemisphere. Determining the exact impact of climate change on agricultural systems has proven to be a challenge due to highly complex probability models and the fact that agriculture itself (which releases high levels of methane and nitrous oxide) contributes about 14 per cent of greenhouse gas emissions (6.8 Gigatonnes [Gt] of CO₂), but also has the potential to mitigate between 5.5–6 Gt of CO₂ per year, mainly through soil carbon sequestration.

4.2.4 Fragility of agro-ecosystems as food production systems

Many of the world's agro-ecosystems being used as food production systems are already showing worrying signs of degradation. According to the Millennium Ecosystem Assessment, 60 per cent or 15 out of 24 ecosystem services examined are already being degraded or used unsustainably.³¹ The use of two of these systems, capture fisheries and fresh water, is now well beyond levels that can be sustained even at current demand, much less future ones. In addition, actions to intensify other ecosystem services often cause the degradation of yet others. For example, because actions to increase food production typically involve the increased use of water and fertilisers or expansion of the area of cultivated land, these same actions often degrade other ecosystems, including reducing the availability of water for other uses, degrading water quality, reducing biodiversity and decreasing forest cover (which in turn may lead to the loss of forest products and the release of greenhouse gases).

Currently, land resources available for food production are under stress. The most recent assessment on land degradation performed by FAO revealed that more than 20 per cent of all cultivated areas, 30 per cent of forests and 10 per cent of grasslands are degrading.³²

³⁰ FAO, 2009a

³¹ Millennium Ecosystem Assessment, 2005

³² FAO. Land Degradation Assessment in Drylands.

Land degradation can be defined as a change in one or more of the land's properties that results in a decline in land quality.³³ As soil is a fundamental component of land, soil degradation is a fundamental component of land degradation. Examples of soil degradation include loss of topsoil through erosion by water or wind, depletion of soil nutrients, loss of soil organic matter, compaction, waterlogging, salinisation and acidification. FAO estimated that 1.5 billion people, or about a quarter of the world's population, depend directly on land that is being degraded.

According to the International Soil Reference and Information Centre, water erosion is a dominant feature in degraded soils in South and Southeast Asia followed by chemical deterioration and wind erosion.³⁴ Water erosion covers 21 per cent of the total land area in the region (or 46 per cent of the total degraded area). It is predominant in large parts of China (>180 million hectares [Mha]) except for the northern parts, on the Indian subcontinent (>90 Mha) and in the sloping parts of Indochina (40 Mha), the Philippines (10 Mha) and Indonesia (22.5 Mha). In relative terms (as a percentage of the total country area) moderate to extreme water erosion is particularly significant in India (10 per cent), the Philippines (38 per cent), Pakistan (12.5 per cent), Thailand (15 per cent) and Vietnam (10 per cent).

4.2.5 Unfriendly policies toward farmers

Policies that may be farmer-friendly in developed countries may not necessarily be the case in developing countries. A good example of such a policy is the way OECD countries protect their farmers through subsidies, which amounts to unfair competition. In 2008, support to producers in the OECD area was estimated at US\$265 billion. These farm subsidies in countries like the US or the European Union encourage overproduction. Markets are flooded with surplus crops that are sold below the cost of production, depressing world prices. Developing countries with unsubsidised goods are essentially shut out of world markets, devastating their local economies. Every year, farm subsidies cost developing countries about US\$24 billion in lost agricultural income.³⁵ The international cotton trade provides the best example of the damaging effects of commodity subsidies.

The spate of farmer suicides in India in the last few years also highlights the ineffectiveness of government policies in protecting farmers from unscrupulous money lenders.³⁶ A report prepared by the Comptroller and Auditor General of India in 2008, stated that there were "serious efficiency lapses in implementation of the relief schemes". The report also blamed the government for not spending funds on educating farmers about their rights. Nearly 75 per cent of farmers were unaware of the ban on illegal money lending and many farmers continued to pay high interest rates despite these debts being declared illegal. Further, there were also instances where banks claimed higher interest rates than what was permitted.

Current market and trade policies have major distributional impacts among and within countries that, in many cases, have not been favourable for small-scale farmers and rural livelihoods.³⁷ Most profits from agricultural production are captured by actors further down the food supply chain, and not by farmers. Particularly in North America and Europe, the largest actors have predominant influence over the production, processing and marketing of

³³ Wiebe, 2003

³⁴ Van Lynden and Oldeman, 1997

³⁵ Borders and Burnett, 2006

³⁶ Pinglay, 2008

³⁷ IAASTD, 2008

food. This rather recent development, which is not only limited to these parts of the world, has disconnected farmers from consumers and ensured that most profits are "captured by industries after the farm-gate, not by farmers".³⁸

4.2.6 Declining number of farmers and feminisation of agriculture

The rapid increase in urbanisation and the migration of people from rural to urban areas have highlighted another key concern regarding the future of global food security. Will there be enough farmers to farm the land to feed the people in the cities in the next 10, 20, 30 or more years? As already mentioned earlier, the last five decades have seen a significant shift from the countryside to the cities. With this massive migration, the world has seen the number of people working in agriculture decline over the years (see Table 1). Though in North America, Europe and some parts of Latin America, this has been a result of increased farm efficiency and the mechanisation of agriculture, the declining number of farmers in other parts of the world has been due to more lucrative and attractive jobs offered by the city compared to the drudgery of rural farm life.

A more worrying trend is the fact that the farmers left to tend the world's agricultural land are also growing older. In some cases, farmers are older than the population at large (see Table 2).³⁹ The proportion of farmers over age 65 in the United States, Canada, Japan and South Korea is much higher than the proportion of the total population over 65 years of age. In addition, the average age of full-time farmers in those four countries is much higher than that of the labour force in general. In the United States in 1998, the average age of the civilian labour force was 38, while that of full-time farmers was 57. The United States, Canada and Japan are high-income countries with "old" populations, while South Korea is a middle-income country in transition from having a "young" population to having an "old" population. According to the Japanese Agriculture Ministry, 70 per cent of Japan's **3 million farmers are 60 or older**.⁴⁰ In Korea, people over 65 years old make up 30 per cent of the rural population, an ageing rate more than three times that of the national average.⁴¹ In China, the average age of working farmers is 40 but in certain regions, the situation is worse with the average age being above 50. In a decade, it is likely that the average age of China's population of working farmers will be over 50, or even 60.⁴² These are worrying trends especially in light of the current food crisis.

³⁸ Ibid.

³⁹ Population Reference Bureau, 2000

⁴⁰ Fackler, 2009

⁴¹ He, 2007

⁴² Ibid.

Table 1: Agricultural labour force as a per cent of total labour force (per cent-%), 1961–2004

| | 1961 | 1970 | 1980 | 1990 | 2000 | 2004 |
|-----------------------------|------|------|------|------|------|------|
| Asia | 76 | 71.6 | 67.3 | 63.6 | 57.6 | 55.4 |
| Central America & Caribbean | 54.1 | 45.8 | 37.4 | 30 | 23.9 | 21.8 |
| Europe | 27.2 | 19.7 | 14 | 10.2 | 8.6 | 7.5 |
| Middle East & North Africa | 68 | 60.6 | 50 | 38.9 | 32.6 | 30.3 |
| North America | 6.9 | 4.6 | 3.8 | 2.9 | 2.1 | 1.9 |
| Oceania | 27.7 | 23.9 | 21.8 | 20.4 | 19.4 | 19.4 |
| South America | 45.7 | 40.4 | 32.8 | 23.3 | 17.8 | 16 |
| Sub-Saharan Africa | 80.2 | 77.2 | 70.2 | 65.8 | 62.5 | 60.5 |
| World | 60.7 | 56.1 | 52 | 48.9 | 44.7 | 43.1 |

Source: World Resources Institute

Table 2: Average age of farmers in the US, Canada, Japan and Korea (1970 and 1998)

| | Farmers 65 and older (%) | | Ave. Age of Farmers | | No. of Farmers (millions) | | Population 65 and older (%) | |
|----------|--------------------------|------|---------------------|------|---------------------------|------|-----------------------------|------|
| | 1970 | 1998 | 1970 | 1998 | 1970 | 1998 | 1970 | 1998 |
| US | 17 | 35 | 51 | 57 | 1.2 | 1 | 10 | 13 |
| Canada | 12 | 19 | 49 | 51 | 0.3 | 0.3 | 8 | 12 |
| Japan | 14 | 43 | 47 | 60 | 7 | 2.5 | 7 | 16 |
| S. Korea | 5 | 16 | 36 | 50 | 14.4 | 4.9 | 3 | 6 |

Source: Population Reference Bureau, 2000

Concomitant with the changes in the age profile of farmers is the gender-related changes of the farming community in countries like China which has evidenced massive rural to urban migrations. A study conducted in three south-western China provinces showed that the average age of full-time farmers was around 50 and women composed 78 per cent of the total agricultural labour force.⁴³ Further, the study also found that women's access to technology and related production resources was quite limited despite their increasingly dominant roles in the division of labour and decision-making in agriculture.

4.3 Food Security Analysis and Estimation of Vulnerability

The World Food Summit (WFS) in 1996 and the Millennium Development Goals (MDG) in 2000 set targets for hunger reduction based on two indicators to assess the extent of food insecurity in population groups globally and within countries at community, regional or other sub-national levels. The first reflects the proportion of a population that is *undernourished*, i.e., whose food intake regularly provides less than their minimum energy requirements. The second reflects the prevalence of *underweight* children under five years of age using anthropometric measurements. The undernourished indicator considers the food balance sheet (FBS), which is based on country-level data on food production and trade. This provides information on how much food is available for human consumption at the country level. This measure, however, does not take into consideration equitability. The other measure used to assess undernourishment is the household

⁴³ Song et al., 2009

budget survey (HBS). The HBS is a bottom-up approach which involves the collection of information at the household level, with particular attention to household expenditure on food items, weight and amount of food consumed and a food composition table to determine caloric value. The HBS method is a better way to measure food access.

Data collected over the years have shown the importance of using all three methods of measurement (FBS, HBS, underweight) in generating an accurate picture of the food security situation of a given population since each approach captures different facets. For example, data collected in Laos by the World Food Programme (WFP) in 2002/2003 showed the FBS indicating 21 per cent of the population was undernourished while the HBS gave an indication of 31 per cent.⁴⁴ In comparison, anthropometric measurements showed that 40 per cent were underweight. The above, in conjunction with other food security assessment tools, is used by the WFP as the basis of all their operations (e.g., emergency operations, protracted relief and recovery operations, and country programmes).⁴⁵ Their food security analysis allows them to: identify the most appropriate type and scale of intervention (whether it be food distributions, school feeding, support to re-establish livelihoods, or more innovative interventions such as cash or voucher programmes); to identify the most food-insecure people to ensure the most effective targeting; and to ensure the most efficient use of humanitarian resources by allocating funding according to needs.

5. Conclusion

The food crisis at the end of the last decade and the resulting food riots that occurred all over the world exposed the vulnerability and fragility of the current global food system and brought to light the problem of urban food security. It also revealed the interconnectedness of countries in this ever globalising world and the complex interplay of various forces affecting food security. What happened in one country, whether it was a drought, a delayed monsoon, a pest outbreak, or a policy change, not only had dramatic repercussions within that country but in other countries as well regardless of their economic status or how closely those countries were connected to the former. A truly “systems approach” is needed to study and deal with the many inter-related factors and players in food security. Too often have professional communities maintained disciplinary barriers when addressing complex problems and in food security debates this is exemplified by the divide between policy and technology and the “supply” explanation versus the “access” explanation for some types of food insecurity.

The crisis was a wake-up call for the international community and has galvanised governments all over the world to refocus their attention on food security issues. While many of the international policy prescriptions from the UN High-Level Task Force (2008)⁴⁶ or from other international organisations and non-governmental organisations (e.g., FAO, IFPRI, Oxfam) recognised the vulnerability of poor urban residents who rely primarily on market purchases for their food and called for the strengthening of social protection schemes, much of the policy consensus focused on addressing constraints to rural and agricultural issues and only indirectly on the urban impacts of higher food prices. In order to successfully address the problem of urban food security in the face of food price increases, policies and programmes need to better reflect the urban context. In this paper we have made the case that as the world increasingly urbanises, the factors of production, technologies and indeed

⁴⁴ Sheinkman, 2010

⁴⁵ WFP, 2010

⁴⁶ UN HLTF, 2008

policies which were predominantly aimed at rural populations, must now adapt to address urban situations. Some of these adaptations may be “old wine in new bottles”, but others will have to be “new wine in new bottles”. While cognisant of the important role of urban income and urban employment as influencers of food access, this analysis has purposely chosen to focus the discussion on availability. A future paper will address the inter-relationships between food availability, distribution, access and utilisation.

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