

Developing Countries Face Urbanization Growth, Food-Security Worries, and Food-Safety Challenges

Shahla Shapouri and Stacey Rosen

For the first time in history, more than half of the world's population lived in urban areas in 2008 (UN Population Fund, 2007). This urban population is projected to increase from 3.3 billion in 2008 to nearly 5 billion by 2030. In the beginning of the 20th century, the urban population was only 220 million, compared to a total global population of 1.65 billion. Regionally, the highest urbanization growth is taking place in Asia and Sub-Saharan Africa where urban population is projected to double from 2000 to 2030 (fig. A-1). The high rate of growth has raised concerns among policymakers and aid donors, some of whom believe that this trend will exacerbate poverty and food insecurity in big cities. The questions that arise when examining these trends are:

- what are the factors behind such high rates of urban growth?
- what are the economic and food-security implications of this growth?
- what challenges and policy options lie ahead as an increasing share of the world's population resides in urban areas?

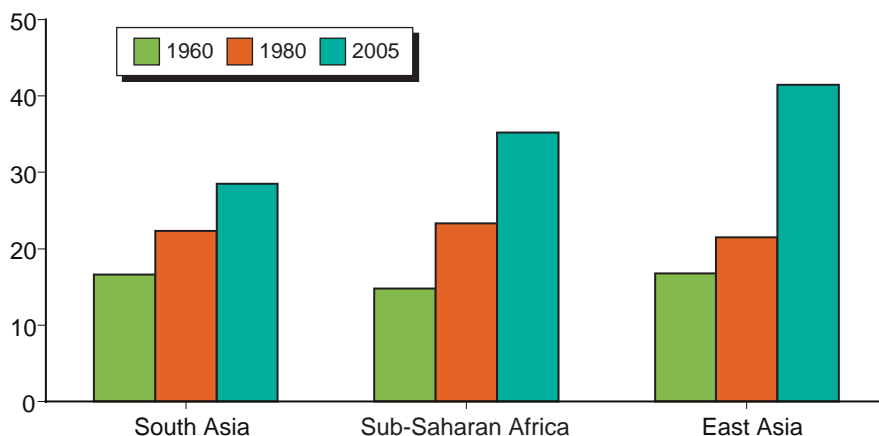
Why Urban Growth Is High

The history of developed countries shows that urbanization has been a key step in their economic development. During the transformation of countries from rural to urban economies or from agricultural-based to industrial- and service-based economies, the demand for agricultural labor has fallen, while labor productivity both in the agricultural and nonagricultural sectors

Figure A-1

Urban population

Percent of total



Source: World Bank, World Development Indicators 2008.

has risen. This change led to higher incomes and reduced poverty for the remaining rural workers.

The experience of developed countries indicates that proximity to and high concentration of populations in urban areas led to higher living standards as costs of providing services were lower than in rural areas. Other factors contributed to this outcome, including improved access to education and diversity of employment opportunities in the urban areas. There are developing-country experiences that illustrate the positive impact of urbanization on economic growth. A World Bank study of Asian countries (Cambodia, Indonesia, Mongolia, the Philippines, and Vietnam) showed that urban activities were the engine of growth accounting for 70 percent of growth in those countries during the last couple of decades (World Bank, *An East Asian Renaissance: Ideas for Economic Growth*, 2007). One potential positive outcome of urbanization growth is the augmentation of rural incomes as migrant workers in the urban areas send remittances home.

The high urbanization growth in many developing countries, especially the lower income ones, is taking place at a time when the availability of nonfarm jobs is limited. In fact, according to a United Nations Conference on Trade and Development (UNCTAD) study, nonfarm productivity in the least developed countries declined 9 percent from 1980-83 to 2000-03. (UNCTAD, *The Least Developed Countries Report: Developing Productive Capacity*, 2006). However, it is likely that the developed countries' experiences (i.e., upward social and economic mobility) created a positive perception for developing countries of urban living compared with rural areas.

The classical models of rural-urban migration are based on rising agricultural productivity that leads to declining demand for agricultural labor. In the case of many developing countries, low agricultural productivity is driving rural-urban migration. A clear example of this case is the high rate of urbanization that took place in Sub-Saharan Africa during the 1980s and 1990s, a time of low or even zero agricultural and economic growth. In this region, urban growth is driven by stagnant agricultural productivity and the poor state of rural living conditions. The situation is not unique to SSA, as rising populations, the decline in available farmland, and inequities in land holding are encouraging landless populations to migrate to cities in search of jobs in many lower income countries. According to UNCTAD, in 2000-03 the average farm size was less than 1 hectare in 33 of the 50 poorest countries in the world. In addition, increased populations have forced farmers to move to marginal lands where productivity is lower. As a result, agricultural labor productivity early in this decade was less than it was two decades ago in one-third of these countries (UNCTAD, *The Least Developed Countries Report: Developing Productive Capacity*, 2006).

Rising Urban Poverty Is a Threat to Food Security

At the aggregate level, economic and social conditions in urban areas are much better than those in rural areas. But aggregate figures do not account for inequality within the urban population that is generally much greater than within the rural areas (World Bank, *World Bank Development Report*, 2000). According to FAO, these aggregate data mask the deep food-insecurity and hunger issues in urban areas, which remain under-reported problems

(UN, FAO, 2004). Unlike in rural areas, food-insecurity problems in urban areas are not related to a lack of available food. Instead, they are related to inadequate purchasing power. High income inequality in urban areas is the reason that more than half of the urban population is below the poverty line in developing countries with varying income levels, such as Angola, Armenia, Azerbaijan, Bolivia, Chad, Colombia, Georgia, Guatemala, Haiti, Madagascar, Malawi, Mozambique, Niger, Sierra Leone, and Zambia.

About 90 percent of the world's slums are in developing countries, with the largest share being in Asia (India and China together account for 37 percent), followed by SSA and Latin America. A slum is defined as a district of a city marked by poverty and inferior living conditions. SSA has the highest share of its urban population living in slum conditions, 72 percent, followed by Asia at 56 percent (UN Population Fund, 2007). In Latin America, roughly half of the urban population is considered to be living in slums. Latin America has the highest level of income inequality in the world and, compared with other developing regions, it has the largest share of the population living in the urban areas, 70 percent.

Poverty in the urban areas of developing countries is growing faster than in rural areas. A recent World Bank and IMF report based on more than 200 surveys in 90 developing countries documented a slower pace of poverty reduction during 1993 to 2000 than in the past. The report showed that the growth in urban poverty was 30 percent higher than rural poverty during that time period. This translated into an additional 50 million poor people in urban areas (those living on less than \$1 a day) in a period of just 7 years (IMF, September 2007). In absolute terms, rural poverty remains higher than urban poverty, but urban poverty is growing at a faster rate.

Urban population growth has two components: natural growth in population and rural migration. Natural growth accounts for about half of the poverty growth and the rate is high because lower income populations tend to have higher fertility rates than the higher income segment of the population. The situation is clearly more precarious in the lower income countries where poverty is deeper. As for the second component of growth in urban poverty, people are looking for what they perceive to be better opportunities in the urban areas, particularly in terms of employment and amenities, while in some cases migrants are fleeing political violence. Therefore, they leave rural areas and head for urban areas. But often, the wages received in these areas are not that high, particularly given the higher cost of living, so their actual incomes and standards of living may not be any higher, and may perhaps be lower, than they were in rural areas.

The urban economy is highly monetized and the costs of food, accommodations, transportation, and other services are much higher in urban than rural areas. The differential in urban-rural cost of living has widened since the adoption of structural adjustment policies in the 1980s (UN Economic and Social Council, September 2007). Prior to the adoption of these policies, the governments of most developing countries were the sole providers of basic consumer services. In addition to cutting budgets, these policies called for the privatization of many functions previously held by the government. Because of inadequate resources, the private sector was not able to enter the market immediately and fill the void in providing services. As a result, the informal

sector grew and because this sector is not subject to any regulation, prices for services grew rapidly. In Africa, where urban poverty is the highest, the informal sector employs about 80 percent of the labor force. The informal sector is economic activity that is neither taxed nor monitored by a government; and is not included in that government's gross national product (GNP) as opposed to a formal economy.

Regionally, SSA countries have the highest rates of urban growth and the highest levels of urban poverty in the world (UN, *The State of the World's Cities Report*, 2006/07). The population living in slums in SSA doubled during 1990 to 2005 when it reached 200 million. This does not mean that the situation is favorable for the urban population in that region who do not live in slums. In the Central African Republic, Chad, and Ethiopia, for example, as many as 90 percent of non-slum urban households lack access to clean water and sanitation, and waste disposal is a huge health issue. For many countries in the region, political violence plus a poor rural economy were responsible for the huge influx of urban migration.

In Asia, the percent of the urban population living in slums ranges from 43 percent in southern Asia to 37 percent in eastern Asia to 24 percent in western Asia. In the lower income countries, such as Cambodia and Nepal, urbanization growth is three times higher than rural growth. According to a World Bank study, rural poverty in Asia is declining significantly while it is increasing in the urban areas (World Bank, April 2007).

In Latin America, where 50 percent of the poor live in cities, the gap between social needs and social resources is growing but inter-regional migration continues to cushion the deepening of poverty. In the Central American countries of Guatemala, El Salvador, Nicaragua, and Honduras, up to 25 percent of the population have migrated north to Mexico, the United States, or Canada for better economic opportunities. In 2004, remittance flows contributed 10 to 18 percent of GDP in these countries. The remittance amount is three to seven times greater than the contribution of tourism, one of the larger sources of foreign exchange earnings for these countries.

High Urban Exposure to Economic Shocks

An important feature affecting developing countries' urban food markets is growing import dependence. In many countries, imported foods, including basic staple foods such as grains and vegetable oils, are an important component of food supplies in urban areas. From 2004-06, in the lower income Latin American and Caribbean countries, the import share of total grain supplies equaled 45 percent, compared with 31 percent for SSA, and 12 percent in lower income Asian countries. At the country level, the situation varies significantly. For example, imports accounted for more than half of grain supplies in 11 SSA countries (Eritrea, Somalia, Angola, Lesotho, Swaziland, Zimbabwe, Cape Verde, Gambia, Liberia, Mauritania, and Senegal) in 2005-06. In 7 countries (Cameroon, the Democratic Republic of Congo, Mozambique, Benin, Côte d'Ivoire, Ghana, and Guinea-Bissau), the import share was in the range of 30 to 50 percent.

In many countries, most of the imported commodities remain in urban areas because weak infrastructure precludes distribution throughout the country,

especially in the rural areas. In addition, urban areas, unlike rural areas, do not rely solely or even significantly on regionally or locally produced foods. A larger component of urban residents' diets is likely to be comprised of imported foods.

High import dependence, especially for lower income countries with limited foreign exchange reserves, means that any increase in import prices or decline in export earnings could force a decline in food imports, causing their food security to deteriorate. There is also the internal market dysfunction that makes urban consumers vulnerable to changes in global economic conditions. During the last two decades, the policies of economic openness adopted by countries, to varying degrees, were implemented in environments where economic signals are not fully transmitted between urban and rural markets. While these weak linkages buffer, to some extent, the rural communities from both urban and global economic downturns, they also limit the benefits of an economic upturn. The rising commodity prices of 2002-08 should have improved production incentives in the agricultural sector, but responses were minimal in most SSA countries. An ERS study of five SSA countries (Ghana, Kenya, Mozambique, Senegal, and Uganda) showed that a variety of factors mitigated a local supply response to the higher prices, including rising costs of imported inputs and transportation and infrastructure constraints (Shapouri, 2008). These higher prices were, however, transmitted to consumers in most cases. In some instances (e.g., Mozambique and Senegal), governments did intervene to counter the higher consumer prices, but in all instances, consumers experienced significant price increases.

During 2002-07, international food prices grew by about 50 percent, but in SSA, the food prices in 21 capital cities grew by an average of 64 percent. In Angola, Ghana, and Kenya, food prices more than doubled. Only a few countries in the region were spared. For comparison, food prices in the United States during this period increased by 10 percent (UN, International Labour Organization, *Statistics*, various issues; USDA, ERS website briefing room Food CPI and Expenditures).

The higher food costs in lower income countries in particular are the result of higher transportation costs, both within the countries and for ocean freight, internal market rigidity, limited competition, and the lack of government oversight and regulations. Since May 2008, global prices for several food items such as corn, a staple food in SSA, declined, but trends in various urban centers in the region varied considerably. The monthly global corn price from May through October 2008 declined by 25 percent, but in Malawi (Blantyre), monthly corn prices nearly doubled. In Zambia (Lusaka), the corn price jumped 75 percent, in Mozambique (Maputo), it increased 48 percent. In Kenya (Nairobi), it rose by 7 percent. In only two countries, Ethiopia (Addis Ababa) and Tanzania (Dar es Salaam), did corn prices decline, however, not at the same rate as international prices, but at 8 and 20 percent (U.S. Agency for International Development Famine Early Warning System (FEWSNET), various issues). In early 2008, riots broke out in several countries including Burkina Faso, Cameroon, Senegal, and Mauritania, protesting the higher food and fuel prices.

Urban Food-Safety Concerns Contribute to Food Insecurity

Another problem facing the urban poor is the unhealthy living conditions that are closely linked to food safety and security. According to the UN, about 1.1 billion people in developing countries have inadequate access to clean water and 2.6 billion people lack basic sanitation. Even in the higher income developing region of Latin America, 32 percent of urban households do not have access to clean drinkable water and 57 percent do not have waste discharge services. The situation is worse in slums, where only one-third have access to sanitary disposal of human waste.

Inadequate access to clean water and basic sanitation, combined with crowded urban conditions, exposes the people in urban slums to a high health risk. Globally, household water use is about 5 percent of total water use, but there is a tremendous inequality in access to clean water among households with different income levels (UN Development Program, 2006). In high-income households in Latin American, Asia, and SSA cities, per capita water use is several hundred liters per day. By contrast, water use in those cities' slums is less than 20 liters per day (the level required to meet basic human needs). An additional issue is the discrepancy in the cost of water, which is due to a lack of adequate infrastructure. The poor pay much more than the rich in the same city. In diverse cities such as Jakarta (Indonesia), Manila (the Philippines), Nairobi (Kenya), Mumbai (India), and Dar es Salaam (Tanzania), people in slums pay 5 to 10 times more for clean water than people in the wealthier parts of the cities.

Inaccessibility to clean water and decent sanitation breeds disease, including foodborne disease. According to the World Health Organization (WHO), more than 30 percent of people in the world suffer from foodborne disease annually, with 1.8 million people dying from diarrhea that is caused by contaminated food and/or water. In most cases, foodborne disease does not lead to death, but it will amplify the impact of poor diet including malabsorption and nutritional losses of food (WHO, September 2003). Children in particular are highly vulnerable to an unhealthy environment. A study of the health of children living in Ahmedabad, the largest city in Gujarat state in India, showed that infant mortality rates in slums were twice the rate of the rural areas, on average. And, slum children have more nutritional deficiencies than average children in the state (USAID, 2002). The same condition was reported for slums in Manila, where infant mortality rates were three times higher in slums than non-slums.

The general level of food safety tends to be lower in developing countries because producers and processors often lack strict controls and certification systems that are commonly implemented in developed countries. Water quality is often poor, contamination with heavy metals from industrial or mining activities is common, and food is more likely to be adulterated with toxic farm chemicals and food additives. Although food-safety data in developing countries are scarce, monthly data on refusals of food shipments by the U.S. Food and Drug Administration showed that 65 percent of food shipments refused between November 2007 and October 2008 were from developing countries.¹ (FDA regulates all food in the United States with the

¹The FDA refusals do not reflect the quantity of food refused since shipments can vary in size. FDA can refuse a shipment if it appears to be adulterated, does not meet U.S. labeling requirements, lacks proper manufacturer registrations, or otherwise does not comply with U.S. regulations. See *U.S. Food and Agricultural Imports: Safeguards and Selected Issues*, by Geoffrey S. Becker, Congressional Research Service, August 14, 2008, and *Food Safety and Imports: An Analysis of FDA Import Refusal Reports*, by Jean C. Buzby, Laurian J. Unnevehr, and Donna Roberts, USDA, Economic Research Service, EIB-39, September 2008.

exception of meat, eggs, and poultry.) To put this statistic in context, developing countries accounted for 36 percent of all foods imported into the United States during that period.

Overall, developing countries' food standards tend to be lower than developed countries', but there is also a cadre of larger, more highly capitalized companies that invest in advanced equipment, modern plant layouts, and management systems, and those companies are able to attain international certifications. These high-standard suppliers often operate alongside smaller suppliers with lower standards and may procure raw materials from local supply chains with weak safety controls. This mingling of products from suppliers with high food-safety standards with products from suppliers with lower standards complicates the detection of fraudulent activities such as mislabeling of product content (UN FAO, October 2008).

Food-safety risks faced by the urban poor in developing countries also arise from poor food handling and sanitation. With urbanization, growth in the sale of street foods has become popular because street food requires limited capital assets to meet growing markets. Small-scale food production in and around urban areas, legal or illegal, is a major source of food, particularly for the poor, but also is a potential source of foodborne illness. Enforcing stringent health regulations on such practices increases the cost of food, thereby imposing additional financial pressure on households that are already allocating a high percentage of their income on food. In addition, street-vended foods make a significant contribution to the urban economy. For example, street foods are estimated to generate annual earnings of \$100 million in Accra, Ghana (Nicolaidis, 2008).

The poor nutrition of diets in slums, when combined with the lack of access to clean water and sanitation in a crowded environment, exacerbates the health situation of the poor. If the growing urbanization scenario is added to such conditions, the nutritional well-being of people living in those countries and the health systems of the countries could face serious challenges in the future. In SSA, for example, losses associated with health-related reductions in production equaled about 5 percent of GDP or about \$28 billion in 2003 (UN Development Program, 2006). This exceeded the total aid flow and debt relief to the region.

Conclusions and Policy Options

According to UN estimates, during the first half of the 21st century all population growth will be in urban areas. By 2030, a majority of people in all developing countries will live in urban areas. Poor and food-insecure people will account for a large share of urban growth because of both rural migration and natural growth, since fertility rates are higher among the poor than among higher income populations. These developments will translate to higher poverty and more food insecurity in urban versus rural areas and present a challenge to create employment opportunities for the urban poor. It is estimated that about 60 percent of the urban slum population will be under the age of 18 by 2030 (UN Population Fund, 2007). This realization has not yet translated into policy action in most countries. Poverty is still viewed by many as a rural problem, as both governments and donors continue to allocate resources to rural development in order to reverse the bias of urban policies of the 1970s and 1980s.

Countries are planning and implementing various schemes to slow urbanization growth. The Government of India, for example, under the National Urban Scheme, provides 100 days of employment for rural households on the condition that an adult family member is willing to perform rural unskilled labor. In China, urban migration is controlled by the government, but despite those efforts, the UN projects that China's urban population will approach a 50-percent share by the end of this decade. In SSA, governments have increased investment in rural development with the expectation that this will slow the pace of urban migration, but so far there is no evidence to suggest that this will happen.

The question is: can the experience of the developed countries that adjusted and accommodated high urban growth rates be replicated by developing countries? The answer is not simple because of the differences in public attention and investment. One important factor in developed countries that forced them to address the urban problem was the pressure applied by the wealthy urban population since their lives were affected by the poor living conditions in the slums. However, given the technological advantages available today, the situation has changed. Rich people are now able to purchase services such as pumps for water or portable electricity, thereby protecting themselves from the unhealthy conditions of the urban poor. That schism reduces pressure on developing country governments to invest in urban public services of which the poor are the main beneficiaries.

Growing food-import dependence, in lower income countries in particular, is an urban food-security issue because poor infrastructure precludes imports from being distributed throughout a country. Thus, any increase in import prices or decline in import capacity could lead to a decline in food imports, thereby intensifying food-security vulnerability in urban areas. On the positive side, urbanization expands access to a variety of foods with potential nutritional benefits, albeit at a financial cost because food prices in urban areas are much higher than those in rural areas.

In addition, food safety is a critical concern as consumption becomes more dependent on purchases from markets instead of home cooking. Impacts of unsafe food can have significant health consequences as has become apparent in China during the last few years. The risk is serious, but ensuring food safety will probably be challenging because it requires coordination across the food chain from food production to processing to distribution, and institutional capacity to deal with the situation is limited in most developing countries. However, the health repercussions and economic costs of ignoring the problem can be tremendous in the growing urban environment. Information and education are two critical factors in improving food safety. Improved understanding of food-safety issues by consumers and processors could increase the willingness of consumers to pay more for safe food and be an incentive for producers and processors to produce safer foods.

To improve urban food access, urban gardening is being promoted in some countries. The goal, in addition to increasing food availability, is to enhance urban diets, as well as to generate income for urban households and to improve efficiency of resource use. For fresh produce, in particular, urban production has a comparative advantage in terms of marketing and distance to high concentrations of people. In Cuba, for example, new land is brought

into use by planting vegetables on raised-bed containers in patios, yards, and around houses. Similar steps are being taken in Uruguay and Ecuador. Several Asian countries including Vietnam are also promoting urban gardening. In SSA, urban food production is documented in varying degrees and it is mainly a food-security coping mechanism for those who have access to land. In eastern and southern Africa, in the cities of Kampala (Uganda), Maputo (Mozambique), Harare (Zimbabwe), and Lusaka (Zambia), households traditionally have had access to small plots and are producing staple foods such as corn, peanuts, and cassava for their own consumption.

Urban food production has potential benefits, but also has the risk of contamination during and after production. The risk related to urban food production could be higher than rural production because of limited access to clean water and high population density. But with some quality control, urban agriculture can contribute to a healthier, safer living environment. Urban food production, however, cannot provide enough food for the growing urban population. To improve food security in the urban areas, improvements in infrastructure both in urban and rural areas are critical to allow for efficient flows of food into cities from national and international sources (see box, “China’s Urbanization Changes Diets”). It is important to note that simply increasing food production without effective links to growing urban markets will not enhance food security in urbanizing countries. Improved safety net systems to help cope with production and economic shocks are likely to become more important as urban population rises.

China's Urbanization Changes Diet

China's urbanization is now in full swing. Strict controls on population movement and collective farmland ownership kept most rural people tied to their villages until the 1990s economic boom unleashed the forces of urbanization. Since the 1990s, a dramatic increase in movement of people and agricultural commodities from the countryside to the city and from province to province has played a role in China's economic expansion. Investments in infrastructure—highways, roads, wholesale markets, and agricultural information networks—and complementary growth in mobile phone, information technology, and long distance bus service industries facilitated urbanization and market integration.

China's National Bureau of Statistics reported the urban share of population was 46 percent in 2008, up from about 30 percent in the 1990s. A building boom has pushed the boundaries of cities further into the countryside and many county towns have been transformed into modern satellite cities. Hundreds of industrial parks built on village land have brought factory jobs and urban lifestyles to the countryside.

Eating habits in Chinese cities have evolved with the rise of supermarkets, workplace cafeterias, and restaurant chains that are displacing traditional open-air markets and home cooking. Urban diets have diversified from the traditional staples of rice, noodles, steamed bread, cabbage, and pork to include vegetables, fruits, meats, fish, and poultry (fresh and processed)—from all over China. Government programs subsidized milk sales in school cafeterias, contributing to a sharp increase in milk consumption. Obesity has emerged as a problem among city children indulged with trips to fast-food restaurants and after-school treats and adult officials engaged in business banquets night after night.

A distinctive feature of China's urbanization is its 100 to 200 million rural migrants who move back and forth between villages and cities. These elusive migrants are difficult to count since they work and live temporarily in factory dormitories, construction sites, or rented rooms. Most have parents, spouses, or children in their villages, and many return there after saving enough money to marry or start a business. As economic growth accelerated in recent years, many villages were emptied of their peak working-age population.

The diets and lifestyles of rural people also began to change as a result of the burgeoning growth in recent years as cities and industrial parks spilled into the countryside. Eating habits and lifestyles change markedly when migrants work in cities. Migrants often subsist on basic meals supplied by their employers, but they are exposed to snacks and other foods unavailable in their villages. The remittances they send home to their families provide cash that monetizes

village economies and loosens their reliance on subsistence farming. In the early 1990s, official survey statistics showed that cash purchases only accounted for 45 percent of rural household food expenditures—most “expenditures” were the imputed value of self-produced foods—but the cash share had jumped to 70 percent of rural food expenditures by 2007.

China's officials are concerned about the impact of urbanization on food security. Since 2004, the Government has rolled out a series of farm subsidies, tightened controls on farmland conversion, and devised wide-ranging schemes to raise farm productivity and improve marketing efficiency. A 2008-2020 food-security plan decreed a minimum cultivated land area of 120 million hectares, set targets for increased grain yields, and aimed for maintaining self-sufficiency in rice and wheat and “basic self sufficiency” in corn and livestock products. China has long held large government reserves of wheat, rice, and corn. In 2008, when world grain prices were soaring, China held grain reserves that were more than double the 17-18 percent of annual consumption recommended by the United Nations' Food and Agriculture Organization (the actual quantity is kept secret). In recent years, Chinese officials decided to build up reserves of other foods, including pork, vegetable oil, rapeseed, soybeans, and sugar.

Food is plentiful and inexpensive—the share of urban household expenditures devoted to food fell from over half in the early 1990s to 35 percent in 2007. While China now accounts for about half of the world's soybean imports, it remains a net exporter of cereal grains, aquaculture, and horticultural products. Agricultural output grew roughly 4-5 percent annually during the most recent decade despite declining farm labor and land input. China had five consecutive increases in grain production from 2004 to 2008, with a record output recorded in 2008. Grain reserves swelled as the Government aggressively purchased grain to support prices after the record 2008 harvest.

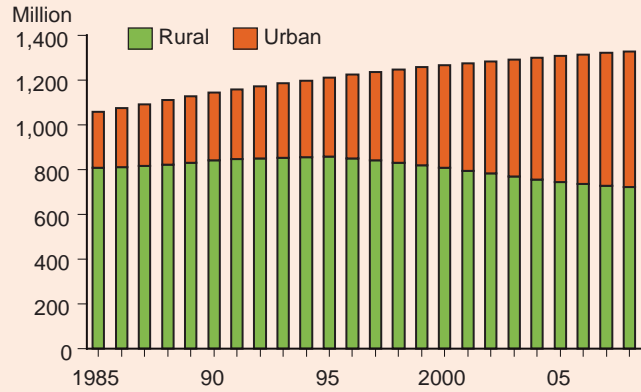
The agricultural sector has become more efficient. The withdrawal of farm laborers facilitated a transition to a more commercialized and productive mode of agriculture. Pork production has shifted from “backyard” modes in which farmers fed pigs scraps and crop stalks for a whole year to specialized farms that raise pigs to market weight in 4-6 months using commercial feeds. Due in part to these efficiencies, China has managed to expand meat production fourfold since the 1980s while remaining an exporter of corn. With the improvement of marketing channels, production of commodities is concentrating in the regions where they can be grown more efficiently. Improved infrastructure and food handling have reduced waste.

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As urbanization proceeds, officials are exploring new ways to commercialize the country's small-scale farm structure and squeeze more production out of the farm sector. They are experimenting with a campaign for "modern agriculture" that includes wide-ranging programs such as agricultural mechanization, soil conservation, improving seeds and animal breeds, and building networks of breeding farms, greenhouses, fish ponds, and feedlots. Officials are exploring options for improving rural credit availability and allowing farmers to consolidate farmland into larger scale operations while preserving the collective land ownership system. Moreover, attractive profits from supplying the growing domestic market will give Chinese farmers incentives to keep production growing fast enough to feed China's urbanizing population.

China's urban population has grown steadily since 1985



Source: ERS analysis of data from China National Bureau of Statistics.

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