

CHAPTER 5 POPULATION AND FOOD SECURITY

Four decades of impressive economic growth, rising per capita income, and growing employment opportunities have provided millions with a better standard of living in the Asia-Pacific region. As a result of this greater prosperity, Asians eat more meat, fish and dairy products. Coupled with a growing population, this increased demand has the potential to overwhelm global commodity markets and raise the specter of food shortages. The close linkage of food scarcity issues to other major problems (environmental damage, trade tensions, and resource disputes) is especially vexing. This chapter examines the food problem in terms of its population, supply, and demand components, identifies key food policies, and points to the potential for these issues to pose security problems in the region.¹

The Problem: Sustainability

Simply put, could the world be running out of food? Market signals in recent years have shown shortages of certain grains, and world food production has leveled off despite the use of genetic yields and other agronomic technology. Despite these trends, few believe that a world food crisis is imminent. There are at least three factors, however, which should dispel complacency on the part of governments and international institutions responsible for establishing food policy:

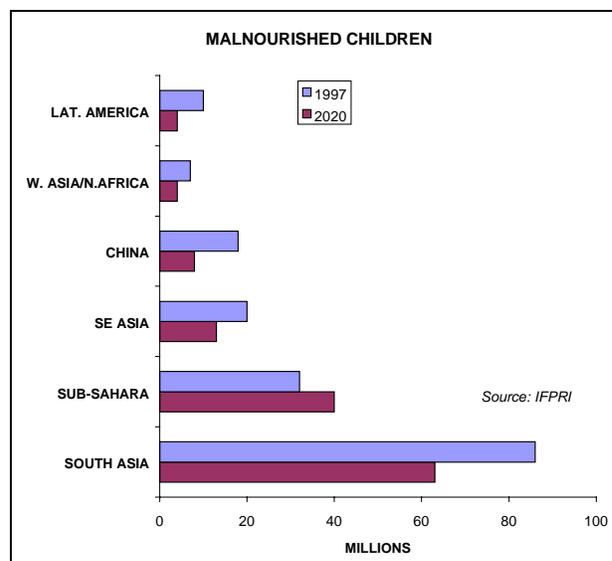
- Global population is likely to increase 50% to over 9B people within the next 50 years;
- The majority of this population currently resides in the developing world; and
- The developing world increasingly is exposed to the effects of industrialization and changing consumption patterns.

Food Security. Food security is generally defined as the ability for a country to supply an assured access to food—in an adequate quantity and quality to meet nutritional demands by all social groups and individuals.

Asia's food security is enhanced by its economic growth and its participation in global markets. These markets have helped match food supply to food demand. Asia's future food demand will be determined by its large, burgeoning populations, which are becoming more and more affluent. Its food supply will be determined through prudent management of the global agricultural resources (arable land, water, energy, and fertilizer) and through technical improvements. A key research question is whether Asia's food supply and demand systems can be sustained.

Malnutrition. Chronic underfeeding is a key indicator of food insecurity.² Malnutrition remains a problem in Asia, although the magnitude is declining as economies grow. (See Figure 5-A.) Asia's success differs from Sub-Saharan Africa, where starvation is localized and driven by poor governance. The social impact of malnutrition is obvious: at the extreme, the chronically underfed child of today could support the terrorist of tomorrow.

Figure 5-A

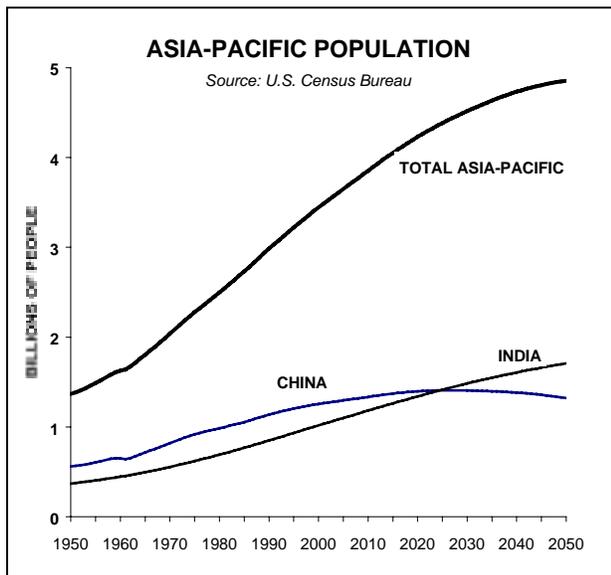


Population Changes

Of the 6B people in the world in 1999, 56%, or 3.4B, live in the Asia-Pacific region. This share gives Asia a dominating role in the demand for world food production. Population growth in the region has slowed in recent years due to modernization, social change, and, to some extent, a decline in fertility rates.³

Whereas fertility rates have slowed in the industrialized sectors of Asia, the rest of Developing Asia is still growing at an above average rate. Each country is unique: there are large differences in children per woman across the region: Japan (1.48), China (1.80), Australia (1.81), Indonesia (2.57), Bangladesh (2.86), India (3.18), Philippines (3.46), Laos (5.55) and Cambodia (5.81). As a result of fertility differences, the U.S. Census Bureau estimates that India's population will exceed China's in the next 30 years.

Figure 5-B



Asia's population momentum and rising health standards will raise the total population of the region to approximately 4.27B by 2025, with a global population at 8.22B. At present, 81M people are added to the world population annually, of which the Asia-Pacific region contributes 63%, or 51M individuals per year. Of this, China contributes 13M and India an even larger 16M people per year.

Food Demand Issues

Volume. Asia's growing population requires an increase in cereal grain production of 344 million metric tons (MMTs) from 1997 to 2020.⁴ Of the 557 MMT global increase, China comprises 26% and India 12%.

Mix. Asia's rising per capita income has caused key shifts in diet and food demand. Asia's economic growth promotes diets of meat, fish, and dairy products and less direct consumption of grains. However, these diets have a multiplier effect on the indirect consumption of grains that support the beef and dairy industries.

Conspicuous consumption. As incomes increase, people usually eat more food and generally eat more meat, which requires enormous amounts of grain to feed livestock, which unfortunately consume more calories and protein than is produced. Concerned scholars believe that these grain-intensive consumption patterns generated by industrializing economies will drive up the price of grains worldwide. This pattern makes it more difficult for the developing world to feed itself, which could lead to unrest and instability.

The China Factor. The fear most often discussed among pessimists is whether China will empty the world's grain markets as it assumes a wealthy nation status. Lester Brown, President of the Worldwatch Institute and a leading Malthusian, estimated that China would import up to 216 MMT of grain by 2030.⁵ A more moderate estimate is for China's grain imports to leap from 8 MMT in 1997 to 48 MMT 2020.

Much of China's newfound affluence is being spent in diversifying the Chinese diet: more pork, poultry, eggs, and beef to eat and more beer to drink—all of which require grain. China alone will account for 43% of additional meat demand worldwide between 1997 and 2020.

Food Supply Issues

Technology. A key finding of food security studies is that most fertile lands are already being exploited and that future increases must come by raising biological yields.⁶ In particular, the development of rice hybrids—especially the nutrient-enhanced "golden" rice—is seeing progress. However, Asia's yield productivity has slowed in recent years, leaving concern for dealing with future demand.

Water. The primary constraint to food production is water scarcity. Despite Asia's seeming abundance of water, especially relative to more arid regions like the Middle East and Africa, Asia's water supply is shrinking. Major food-producing areas such as the Punjab of India and the central and northern areas of China suffer from the depletion of aquifers and the diversion of water from irrigation systems to growing cities.⁷

Land. Another critical resource constraint is arable land.⁸ The sprawl of Asian cities into rural areas and severe soil erosion due to deforestation have forced Asian farmers to rely on gains in yield rather than area expansion for food production. While irrigation almost doubles productivity, incremental gains in fertilization and irrigation present complex problems. For instance, India averaged 3.5% increases in food grains production in the 1980s, but slumped to 1.7% growth between 1991 and 1997 despite an uninterrupted period of excellent rains. In Indonesia, more than one million hectares of farmland have been lost due to industrial and infrastructure development in the last five years. Nevertheless, the primary constraint to expanding crop areas in the near-term is that real grain prices are flat—making expansion unprofitable.

Environment. Global warming, if it continues, will reduce food production in countries closer to the equator. The Pacific Islands and Indonesia likely will be more internationally dependent on outside resources and may see more poverty and social problems if scarcities are not addressed.

Food Policies

Self-Sufficiency Policies. Countries like China are confronted with the impacts of sub-optimizing for food self-sufficiency. The consequences of distorted prices and environmental damage affect long-term food security. Although China's food policy stresses self-sufficiency in cereals (rice, wheat, maize), in the 1990s it recognized the necessity of food imports to deal with dynamic situations.

Japan, historically a self-sufficient food producer, became a net food importer 30 years ago. As paddy fields and farm villages yielded to factories and office buildings, Japan became the world's largest importer of food.⁹ Its decision to rely on the global trading system to assure a stable source of food illustrates the striking interdependence of economic and security strategies.

Global Access Policies. In the 1990s, the governments of Western Europe and the United States initiated production subsidies to help their farmers meet food deficits in Asian countries. A virtuous circle developed in which the industrialized countries (who generated Asia's new-found wealth) met Asia's food imbalances (through Western agricultural prowess). The result is a global trade and transportation network that reinforces food security for the Asia-Pacific region.

Further, China's participation in the WTO will increase its food security by giving it access to global grain markets that are stabilized by internationally accepted standards and robust dispute mechanisms.¹⁰

Governance. A key agent in addressing these long-term problems is the capacity of governments to deliver services that prudently deal with population and food issues.¹¹ Sound institutions help to shape the course of food supply and demand. A brief examination of U.S. governmental bodies illustrates the value that "market-oriented" Americans place on governmental oversight of forests; soils and other natural resources; farms; foreign trade; nutrition and food safety; regulatory and inspection programs; risk management; rural housing, utilities and development; research, education, and outreach; national parks;

indigenous affairs; land management; minerals and mining; and inspector general functions.¹²

A good food policy example is that of Thailand, which since the 1980s has steadily reduced poverty and malnutrition by addressing diet, health, and agricultural production at the community level.

Natural disasters and governance. Asia's poor forestry practices and bad watershed management have induced unnecessary soil erosion, flooding, and social disruption. Often Asia's regional disasters are attributed to natural causes, but bad management practices, poor civil engineering, and weak institutional structures are also to blame.

Military Implications

Often, the military is called upon to address these population and resource issues, whether for domestic purposes (humanitarian assistance and disaster relief, public works; enforcement of exclusive economic zones; assistance in times of national emergency) or for international engagement during peacetime or war.¹³ Therefore, it is essential that military institutions have a judicious understanding of these issues in order to professionally conduct themselves amid their populations and governments.

Conclusions

Asia's food economics connects a modern global trading system with traditionally remote agricultural practices. The linkages between population pressures and food security are fundamental and complex, each discrete concept sharing a cause-and-effect relationship with the other to form a web of problems that is transnational and system-reinforcing.

In particular, the growth of the economies and populations of China and India, coupled with loss of arable land, will increase global demand for grain, exerting upward pressure on commodity prices in the long-term. Studies by the International Food Policy Research Institute indicate a reasonable food supply in coming years. Although experts are not completely optimistic, increases in food prices can be tempered with improved technology

and practices. Poor, populous countries will be the most susceptible to price increases and the most vulnerable to social unrest.

Endnotes

- 1 Rosenberger, Leif Roderick, "The Strategic Importance of the World Food Supply," *Parameters*, Spring 1997.
- 2 Two standard deviations below a median value of weight-for-age is considered a sign of malnutrition, using U.S. National Center for Health Statistics/World Health Organization standards.
- 3 World Bank, *World Development Indicators 2001-2001*; and CIA, *The World Factbook 2000*; UN, *World Population Prospects*, 1996; Census Bureau, *World Population Profile 1998*, March 1999 (www.census.gov/ipc/www/wp98.html) and Census Bureau, *International Data Base (IDB)*.
- 4 Rosegrant, Mark W., et al; *Global Food Projections to 2010: Emerging Trends and Alternative Futures*, August 2001, International Food Policy Research Institute (www.ifpri.cgiar.org/pubs/books/globalfood/projections2020.htm).
- 5 Brown, Lester, *Who Will Feed China?* 1995 (www.worldwatch.com/pubs/ea/wwfc.htm); vs. Rosegrant, *ibid*.
- 6 International Rice Research Institute, *IRRI Annual Report 2000-2001: Rice Research: The Way Forward* (www.irri.org/AR2001/Forward.htm); *Food Security for the World*, Rome World Food Summit, 5-17 November 1996; and Rosegrant, *ibid*.
- 7 Worldwatch, *Press Briefing*, March 6, 1997.
- 8 Miglani, Sanjeev "Falling Food Production Begins to Bite," *Asia Times*, April 16, 1997; Bogor Agriculture Institute in "Indonesian Farmers Suffer Loss to Developers," *Central News Agency Taiwan*, June 24, 1997; and Rosegrant, *ibid*.
- 9 Jacobs, Mike "The Food Security of Japan," *American Chamber of Commerce Japan Journal*, December 1996. Japan's food self-sufficiency rate is 46%, the lowest of G-7 nations, compared with Germany at 92% and the United Kingdom at 74%.
- 10 Index-China, *Challenges for the Future* (www.index-china.com)
- 11 FAO, *The State of Food Insecurity in the World 2000* (www.fao.org/FOCUS/E/SOFI00/sofi001-e.htm)
- 12 U.S. Department of Agriculture (www.usda.gov); U.S. Department of the Interior (www.doi.gov); U.S. Army Corps of Engineers (www.usace.army.mil/public.htm).
- 13 The Center of Excellence in Disaster Management and Humanitarian Assistance (<http://coe-dmha.org/website/index.htm>); U.S. Coast Guard (www.uscg.gov/services.html); U.S. National Guard (www.ngb.dtic.mil).