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World Food in the Twenty-first Century

by Rajul Pandya-Lorch and Mark W. Rosegrant

In recent decades, dramatic changes in food production, processing, and trade provided enough food to meet the basic needs of each and every person in the world. Doubling grain production and tripling livestock production since the early 1960s made available about 2,700 calories per person per day. However, about 820 million people lack access to sufficient food to lead healthy and productive lives, and 160 million children are seriously underweight for their age. The world food situation at the close of the twentieth century is mixed: astonishing advances in agricultural productivity and human ingenuity have not yet translated into a world free of hunger and malnutrition.

What are the prospects for the twenty-first century? Results from the International Food Policy Research Institute's (IFPRI) International Model for Policy Analysis of Agricultural Commodities and Trade (IMPACT) suggest that six major developments will characterize the world food situation during the next two decades, to 2020.

- *Developing countries will drive increases in world food demand.* With an expected 40 percent population increase and an aver-

age annual income growth rate of 4.3 percent, we project that developing countries will account for most of the 690-million-ton increase in global consumption of cereals and the 115-million-ton increase in meat products between 1995 and 2020 (figure 1). Nevertheless, disparities in consumption will remain wide between the developed and developing world: a developing-country person will consume, on average, only 45 percent of the cereals and 38 percent of the meat that a developed-country person will consume in 2020.

- *Demand for meat products will increase considerably in the developing world, particularly in China.* With continued population increases, income growth, and lifestyle changes, consumption of meat will increase by 2.8 percent per year between 1995 and 2020 in developing countries. While we project per capita consumption of cereals to increase by only 10 percent, consumption of meat will increase by 40 percent. East Asia's per capita demand is projected to increase the most, while sub-Saharan Africa and South Asia's is projected to increase the least; by 2020, East Asia's per capita consumption of meat could be as much as seven times that of South Asia (figure 2). Demand for



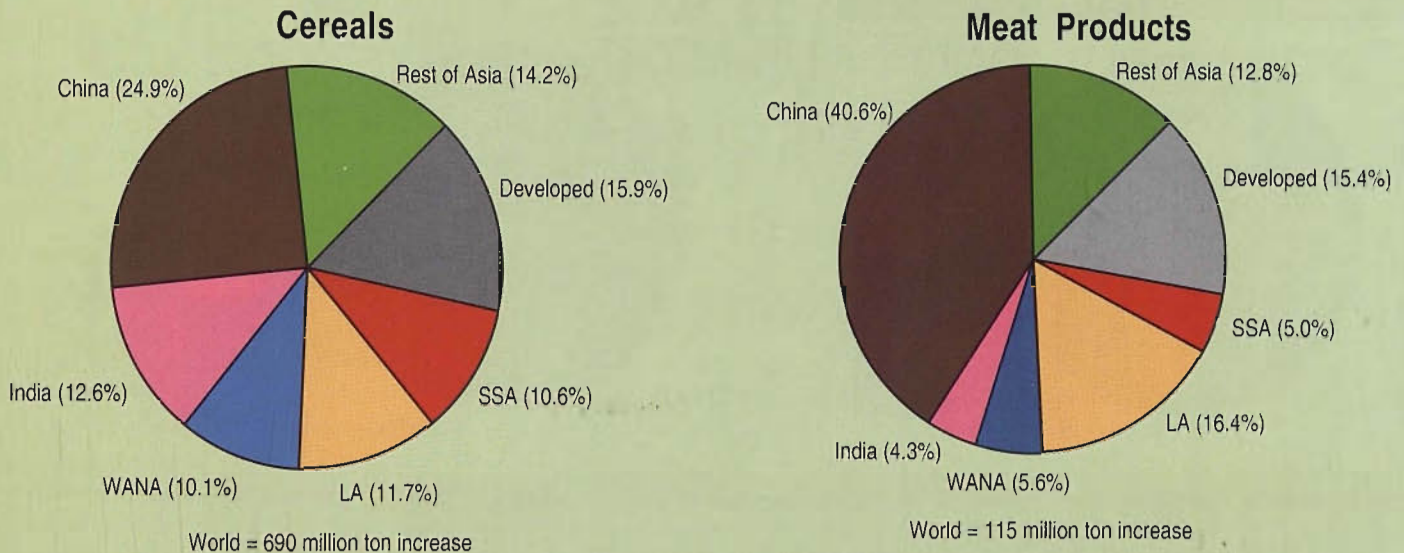


Figure 1. Share of increase in global consumption of cereals and meat products, 1995–2020 (cereal consumption includes food, feed, and other uses)

cereals for feeding livestock will double in developing countries between 1995 and 2020 to 445 million tons; by 2020, 27 percent of the cereal used in developing countries will be directed to animal feed, compared with 21 percent in 1995.

- *Production increases must rely on higher productivity.* Increases in cultivated area will contribute about one-fifth of the increase in global cereal production needed to meet demand between 1995 and 2020 (figure 3). Most of the growth in cereal area will be concentrated in sub-Saharan Africa, where cereal yields are very low. Latin America will modestly expand cereal area, but we project virtually no growth in Asia. Therefore, improvements in crop yields will be required to bring about the necessary production increases.

- *Food production will not keep pace with demand in developing countries.* Net cereal imports by developing countries will increase by 80 percent between 1995 and 2020 to 193 million tons in order to fill the gap between demand and production. About 12 percent of the developing world's cereal consumption in 2020 will be met through net imports from the developed world, up from 10 percent in 1995 (figure 4). Asia's net cereal imports are projected to nearly triple, while those of sub-Saharan Africa will increase by almost 50 percent. We project that the United States will provide almost 60 percent of the cereal net imports of developing countries in 2020; the European Union, about 14 percent, and Australia, about 12 percent.
- *World food prices will remain steady or fall slightly.* Enough food

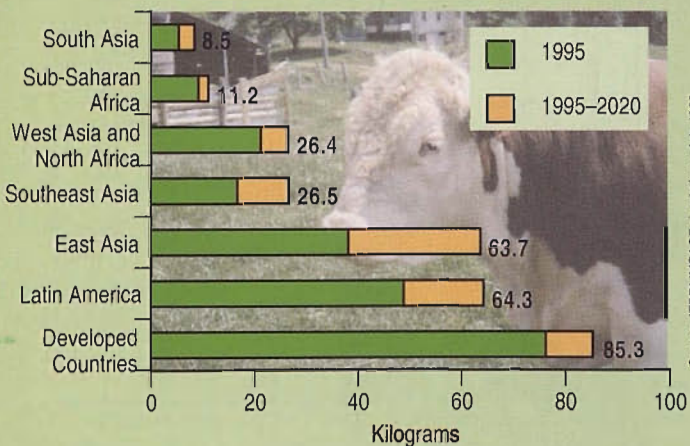


Figure 2. Per capita consumption of meat products, 1995–2020

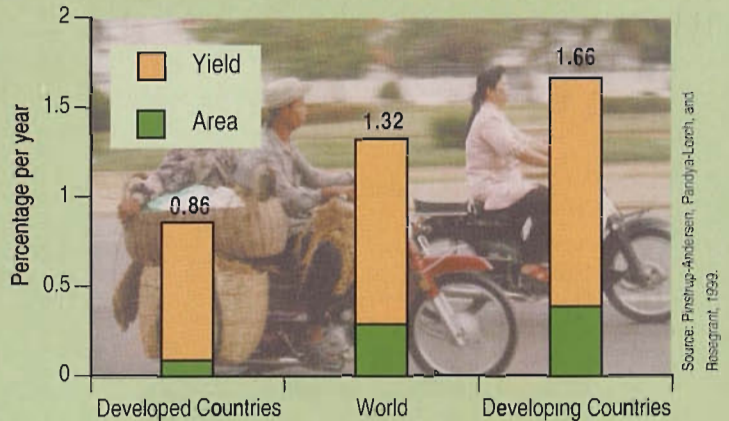


Figure 3. Annual growth in cereal production, 1995–2020

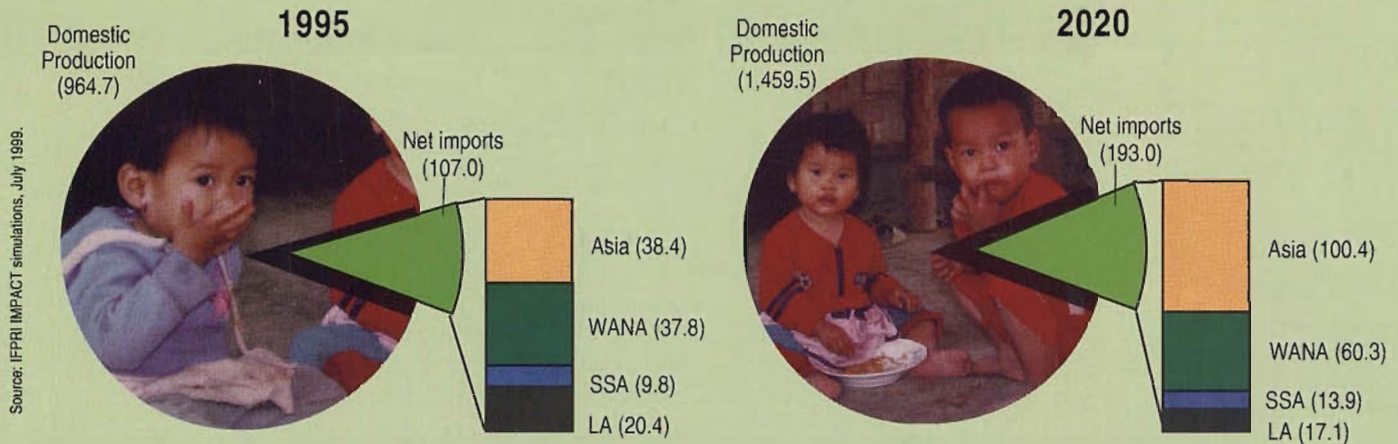


Figure 4. Growing importance of net imports to meet developing-country cereal consumption, 1995 and 2020 (million tons)

will be produced to reduce real world food prices for the next two decades (figure 5). This price decline, however, will be at rates slower than past trends.

- *Hunger and child malnutrition will remain persistent in 2020.* Without major changes in policies and priorities, the number of malnourished children under the age of six years is projected to decline from 160 million in 1995 to 135 million in 2020 (figure 6). Child malnutrition will decline in all regions except sub-Saharan Africa, where it could increase by about 30 percent to reach 40 million children in 2020. In South Asia, despite a reduction in the number of malnourished children by 18 million, as many as two out of five children could still be malnourished in 2020.

This mixed outlook for the world food situation in the twenty-first century could be significantly worse with increased policy

complacency or greater-than-anticipated constraints in or deterioration of key variables such as water availability, land quality, human resource development (education and health), and technological innovations, among others. On the other hand, with concerted political will and appropriate investments, we could realize a food-secure world in 2020. Ultimately, our behavior, priorities, and policies will determine the nature of the world food situation in the twenty-first century. ■

■ For more information

Pinstrup-Andersen, P., R. Pandya-Lorch, and M.W. Rosegrant. *World Food Prospects: Critical Issues for the Early 21st Century*. Washington DC: International Food Policy Research Institute, 2020 Food Policy Report, October 1999.

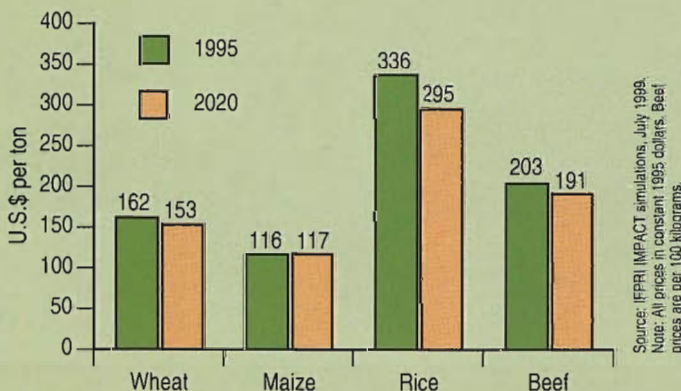


Figure 5. Selected world food prices, 1995 and 2020

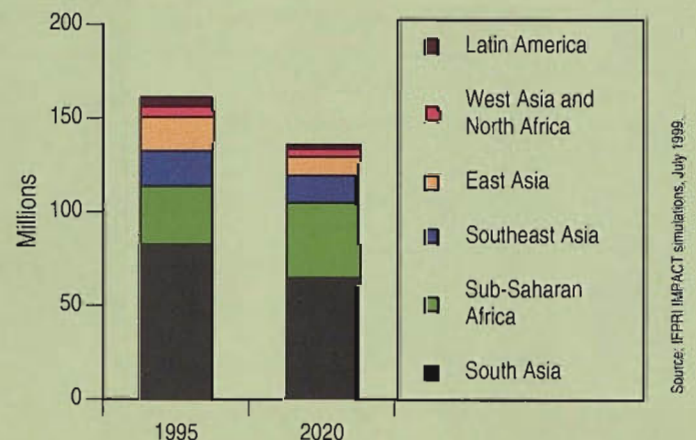


Figure 6. Number of malnourished children, 1995 and 2020