



**SUSTAINABLE FOOD SECURITY  
FOR ALL BY 2020**  
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SUMMARY NOTE

**Panel Discussion:** A World in Flux: Changing Population Profiles and Needs  
**Panelist:** Susan Horton, Professor of Economics and Chair of Division of Social Sciences, University of Toronto  
**Title:** The Nutritional and Epidemiological Transitions

As urbanization and economic growth occur, there are significant changes in diet and activity patterns. These are in turn important elements in the epidemiological transition — the shift from communicable to non-communicable disease. The increase in non-communicable disease significantly increases the costs of illness and the burden on the health care system. Estimates for India and China for 1995 and 2025 suggest that the magnitude of these costs can amount to several percentage points of GDP, and that for middle-income countries the costs of overnutrition already dominate those of undernutrition. There are important implications for food and nutrition policy, for promotion of exercise, for health policy and agricultural policy.

***Diet and activity changes***

As urbanization increases and poverty decreases with economic development, diet and activity patterns change. Households shift from consuming diets based on coarse cereals and vegetables, to diets richer in fat, added sugar, dairy and animal products. At the same time the energy requirements of their work decrease as fewer people work in agriculture, and more work in urban white-collar occupations. The result is that the main nutritional problem begins to shift from undernutrition, to overnutrition.

China is already at the point where the proportion of the population overweight exceeds that which is underweight. In India, although underweight remains the primary concern, there are special concerns attached to individuals who were born to underweight and thin mothers, but who consume richer urban diets as adults. Research by Barker (1994) and others suggest that these individuals are particularly susceptible to a range of diseases including heart disease, stroke, and adult-onset diabetes.

***The epidemiological transition***

In the course of economic development, the major causes of morbidity (illness) and mortality shift from the communicable diseases (those caused by infections and parasites), to the non-communicable ones. In India, for example, the proportion of deaths from communicable diseases exceeded those from non-communicable ones in 1990, but will have shrunk to only a third of non-communicable ones by 2020 (Murray and Lopez 1996).

Diseases which are growing in importance as a cause of death include ischemic heart disease, stroke and other cardiovascular disease and diabetes. It is known that the relative risk for all of these increases with diet indicators such as share of saturated fat in the diet, and with overweight and obesity. There is also mounting evidence that diet affects certain types of cancer. The disease patterns vary somewhat across countries, with stroke and cardiovascular disease being more significant in East Asia, and adult-onset diabetes being particularly high in South Asia (especially urban South Asia).

### ***Economic costs of undernutrition and overnutrition***

Non-communicable diseases can be very costly. In China, the average hospital stay for cancer costs more than annual per capita GDP, and the same is true in India for "heart failure" (Popkin, Horton and Kim 2001). Our estimates suggest that diet-related non-communicable diseases accounted for almost one quarter of hospital costs in China in 1995, and almost 15 percent in India.

Our very conservative estimates suggest that in low income countries such as India, undernutrition still has the greater costs in terms of lost GDP (principally lost productivity due to stunting, iron-deficiency anemia and iodine deficiency, totalling as much as 2 percent of GDP). However, in China, the economic costs of diet-related non-communicable diseases (heart disease, stroke, diabetes, cancer) already equal the economic costs of undernutrition (around 2 percent of GDP) and will certainly outstrip them by 2020.

### ***Policy implications***

It is an urgent priority to implement policies to avert the growing epidemic of diet-related disease in developing countries. Diet and exercise patterns may be set relatively early in life (in childhood and adolescence) although their effects on morbidity and mortality may take several decades to emerge. Developing countries have for so long been preoccupied with undernutrition, that appropriate policies for overnutrition have not been well tried and tested. The issue is even more pressing, since rapid economic growth in Asia means that populations are especially vulnerable to overly rich urban diets (Barker's hypothesis that children born of underweight mothers are "programmed" for diets of scarcity rather than affluence).

A wide range of policies may be useful, including comprehensive food and nutrition plans, school exercise programs, promotion of healthful traditional diets, health promotion, and agricultural research and food price policies. It is important to note that sometimes "quick fixes" for problems of undernutrition (for example, the promotion of agricultural research and price subsidies for oilseeds), may exacerbate the growing epidemic of overnutrition. Developing appropriate policies may therefore be akin to walking a tightrope.

Further research on these issues in the context of developing countries is important. Our economic cost estimates for Asia are among the first such for developing countries. More work is needed, extending to other parts of the developing world.

### ***References***

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