A Visual Guide to the Future World Food Situation

"Available [here are] 23 of the most-requested charts and graphs showing past and future trends in the world food situation. Many of the figures are based on IFPRI's global model of future world food supply, demand, and trade. …. " -- 'New at IFPRI' Mailing List Message, 20 July 2000

International Food Policy Research Institute

1. World population increases, 1995-2000

About 98 percent of the increase in world population between 1995 and 2020 will occur in the developing world. The absolute population increase will be largest in Asia, 1.1 billion, but the relative increase will be greatest in Sub-Saharan Africa, 80 percent (see *World Food Prospects*).

2. Urban and rural population in developing countries, 1950-2020

Much of the population growth in coming decades is expected to take place in the cities of the developing world. By 2020 more than half of the developing world's population will be living in urban areas (see *World Food Prospects*).

3. Projected annual income growth rates, 1995-2020

Prospects for economic growth appear favorable in the developing world. IFPRI projects total income in the developing world to increase at an average of 4.3 percent annually between 1995 and 2020, which would double per capita incomes to more than $2,200 (see *World Food Prospects*).

4. Share of increase in global demand for cereals, 1995-2020

Global demand for cereals is projected to increase by 39 percent between 1995 and 2020 to reach 2,466 million tons (see *World Food Prospects*).

5. Share of increase in global demand for meat products, 1995-2020

Global demand for meat is projected to increase by 58 percent to reach 313 million tons. About 85 percent of this increase will come from developing countries (see *World Food Prospects*).

6. Total demand for cereals and meat products, 1995-2020

By 2020 developing countries as a group are forecast to demand twice as much cereals and meat products as developed countries (see *World Food Prospects*).

7. Per capita demand for cereals and meat products, 1995-2020

Per capita demand for cereals and meat products in developing countries will continue to lag far behind that in developing countries. By 2020 a developing-country person will consume less than half the amount of cereals consumed by a developed-country person and slightly more than one-third of the meat products (see *World Food Prospects*).

8. Per capita demand for meat products, 1995-2020

Per capita demand for meat is projected to increase by 40 percent in the developing world between 1995 and 2020. The increase will be largest in East Asia and smallest in South Asia. By 2020 East Asia's per capita demand for meat would be as much as seven times that of South Asia (see *World Food Prospects*).

9. Sources of growth in cereal production, 1995-2020

The world's farmers will have to produce 40 percent more grain in 2020. Increases in cultivated areas are expected to contribute only one-fifth of the global cereal production needed to meet demand between 1995 and 2020. Higher crop yields will be required to bring about the necessary production increases (see *World Food Prospects*).

10. Annual growth in cereal yields, 1967-82, 1982-94, 1995-2020

Growth in farmers' cereal yields is slowing in both developed and developing countries from the heyday of the Green Revolution in the 1970s (see *World Food Prospects*).

11. Cereal yields, 1995-2020

While the gap in average cereal yields between the developed and developing countries is slowly beginning to narrow, it is widening considerably within the developing world as Sub-Saharan Africa lags further behind (see *World Food Prospects*).

12. Net cereal imports of major developing regions, 1995 and 2020

Despite large increases, cereal production in the developing world will not keep pace with demand. Net cereal imports by developing countries as a group will increase by 80 percent between 1995 and 2020 to fill the gap between production and demand (see *World Food Prospects*).

13. Net trade in cereal of developed countries, 1995 and 2020

About 60 percent of the developing world's net cereal imports in 2020 will come from the United States (see *World Food Prospects*).

14. Number of malnourished children, 1995 and 2020

Under the most likely scenario, the number of malnourished children will decline by only 15 percent from 160 million in 1995 to 135 million in 2020. Sub-Saharan Africa, the only region where the number of malnourished children is forecast to increase, and South Asia will remain "hot spots" of child malnutrition and food insecurity (see *World Food Prospects*).

15. Trends in the number of malnourished children in developing countries, 1970-95

The number of malnourished children in the developing world as a whole declined from 204 million in 1970 to 167 million in 1995. The actual number of malnourished children is still rising in many countries. In Sub-Saharan Africa, the number of children thus affected rose by 70 percent over this quarter century (see *Overcoming Child Malnutrition in Developing Countries*).

16. Trends in the prevalence of child malnutrition in developing countries, 1970-95

While the prevalence of malnutrition in the developing world as a whole fell from 46.5 percent to 31 percent between 1970 and 1995, the pace of change is slowing. During 1970-85 the prevalence of malnutrition fell by 0.8 percentage points per year; during 1985-95 it fell by 0.3 points (see *Overcoming Child Malnutrition in Developing Countries*).

17. Estimated contribution of major determinants to reductions in child malnutrition, 1970-95

The prevalence of child malnutrition in the developing world fell from 46.5 percent to 31 percent between 1970 and 1995. Together, improvements in women's education and status have contributed to more than half of the reduction in the prevalence of child malnutrition (see *Overcoming Child Malnutrition in Developing Countries*).

18. Global estimates of soil degradation

About 1.97 billion hectares (23 percent of globally used land) has been degraded from World War II to 1990. While the effects of soil degradation on food consumption by the rural poor, agricultural markets, agricultural income, and in some cases national wealth are significant, degradation appears not to threaten global food supply by 2020 (see *Soil Degradation*).

19. Water withdrawals for domestic, industrial, and agricultural uses, 1995 and 2020

Global water withdrawals are projected to increase by 35 percent between 1995 and 2020 to reach 5,060 billion cubic meters. A significant structural change in demand for water will occur in developing countries as growth in domestic and industrial uses reduces the share for agricultural uses (see *World Food Situation*).

20. Average annual nutrient depletion (NPK) in Africa, 1993-95

The depletion of nutrients from Africa's agricultural soils is contributing to stagnant or declining crop production. Over 8 million tons of nutrients are lost every year, representing a total loss of US$1.5 billion per year (see *Nutrient Depletion in the Agricultural Soils of Africa*).

21. Global fertilizer use, 1959/60, 1989/90, and 2020

Fertilizer use has increased in both developed and developing countries, but growth was much faster in developing countries, which increased their share of global fertilizer consumption from 10 percent in 1959/60 to 43 percent in 1989/90. By 2020 fertilizer demand in developing countries is forecast to reach 122 million tons (see *The Role of Fertilizer in Sustaining Food Security and Protecting the Environment to 2020* and *World Trends in Fertilizer Use and Projections to 2020*).

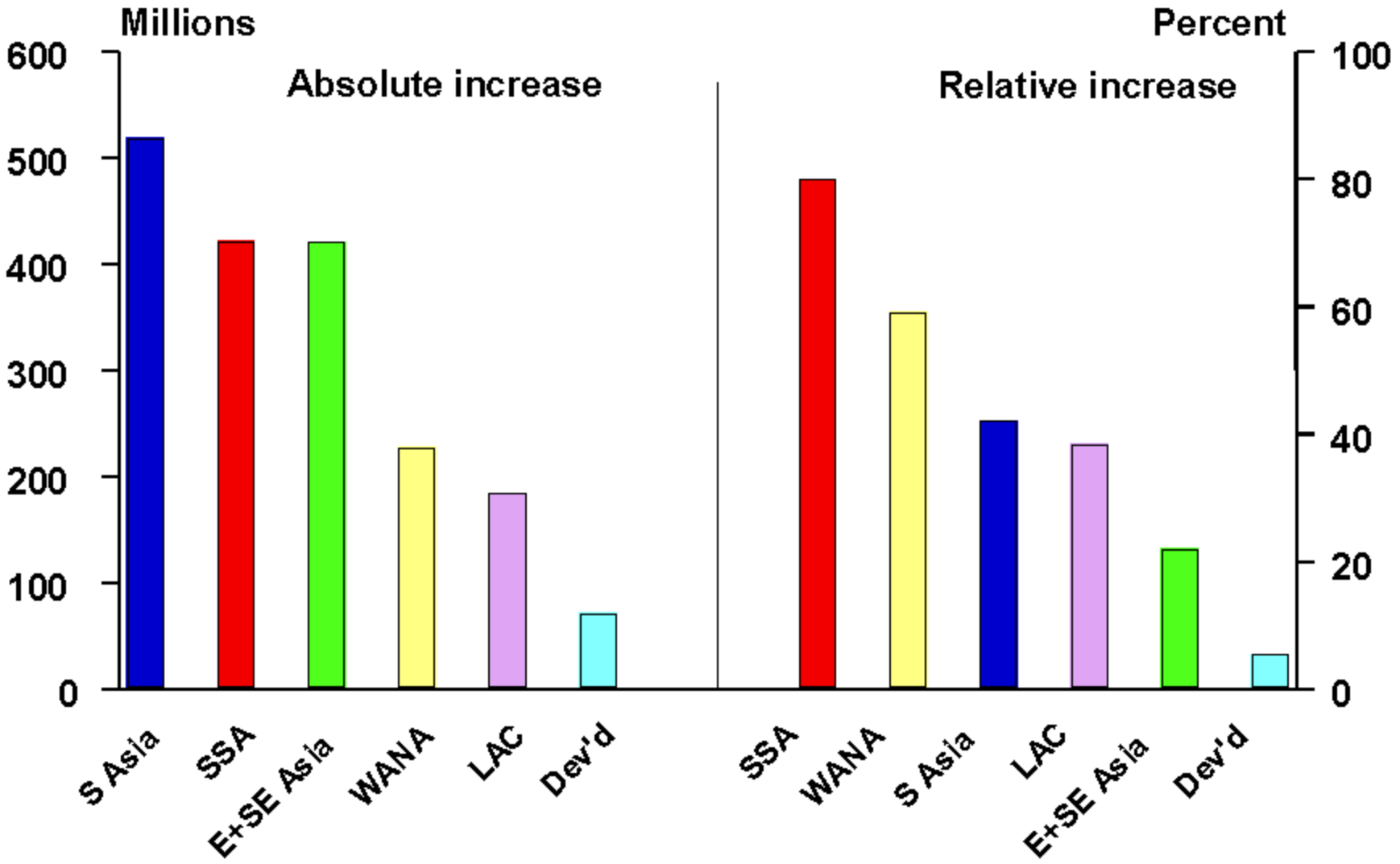
22. Index of total aid and aid to agriculture, 1986-96

While total development aid dropped nearly 15 percent between 1995 and 1996, agricultural aid plummeted almost 50 percent in real terms over 1986-96 (see *Aid to Developing-Country Agriculture*).

23. Actual and peace-adjusted food production growth in Sub-Saharan Africa, 1970-93

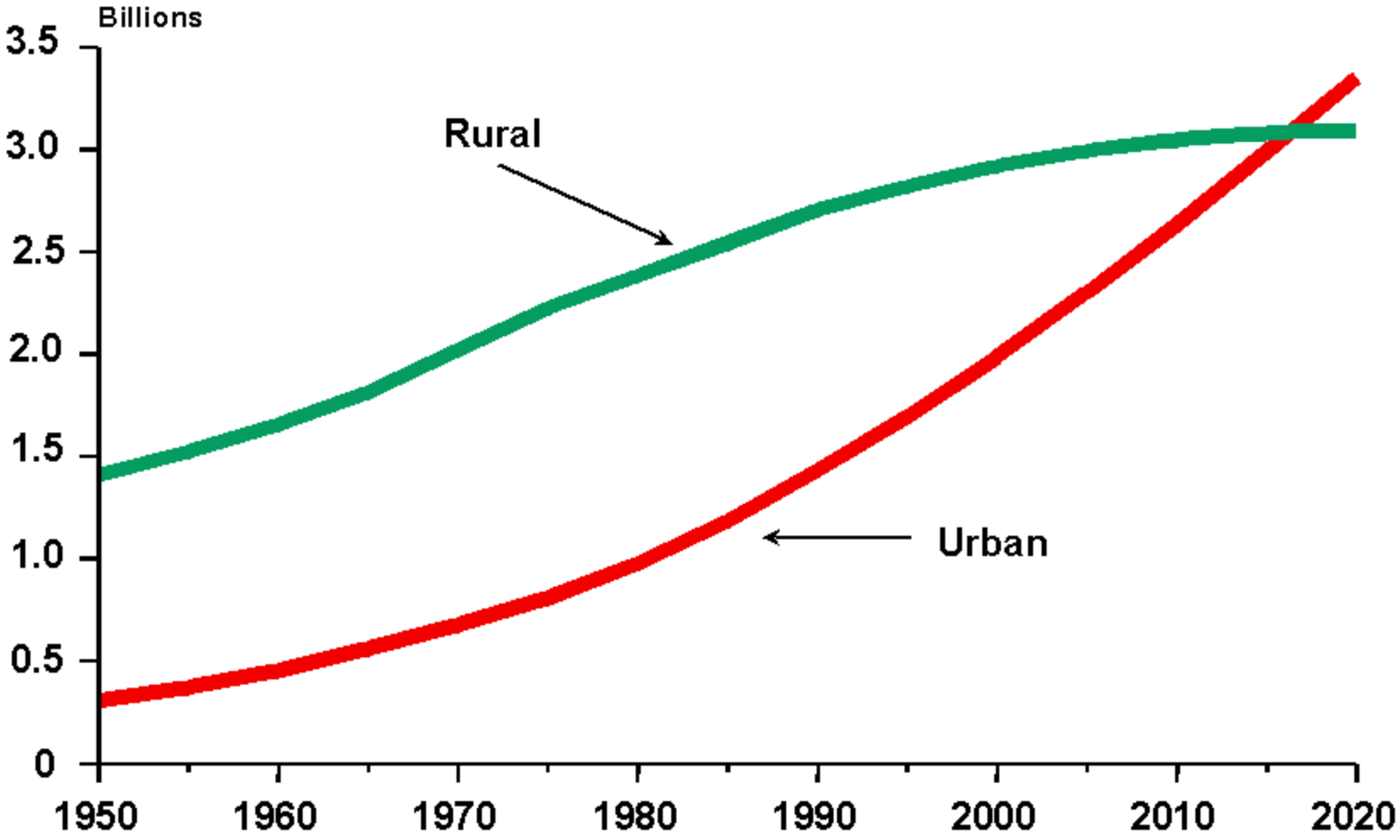
A close relationship exists between conflict and food production. Sub-Saharan African countries experiencing conflict during 1970-93 produced 12.4 percent less food per person in war years than in peacetime. Peace would have added 2 to 5 percent to Africa's food production per capita per year since 1980 (see *Food from Peace*).

World population increases, 1995–2020



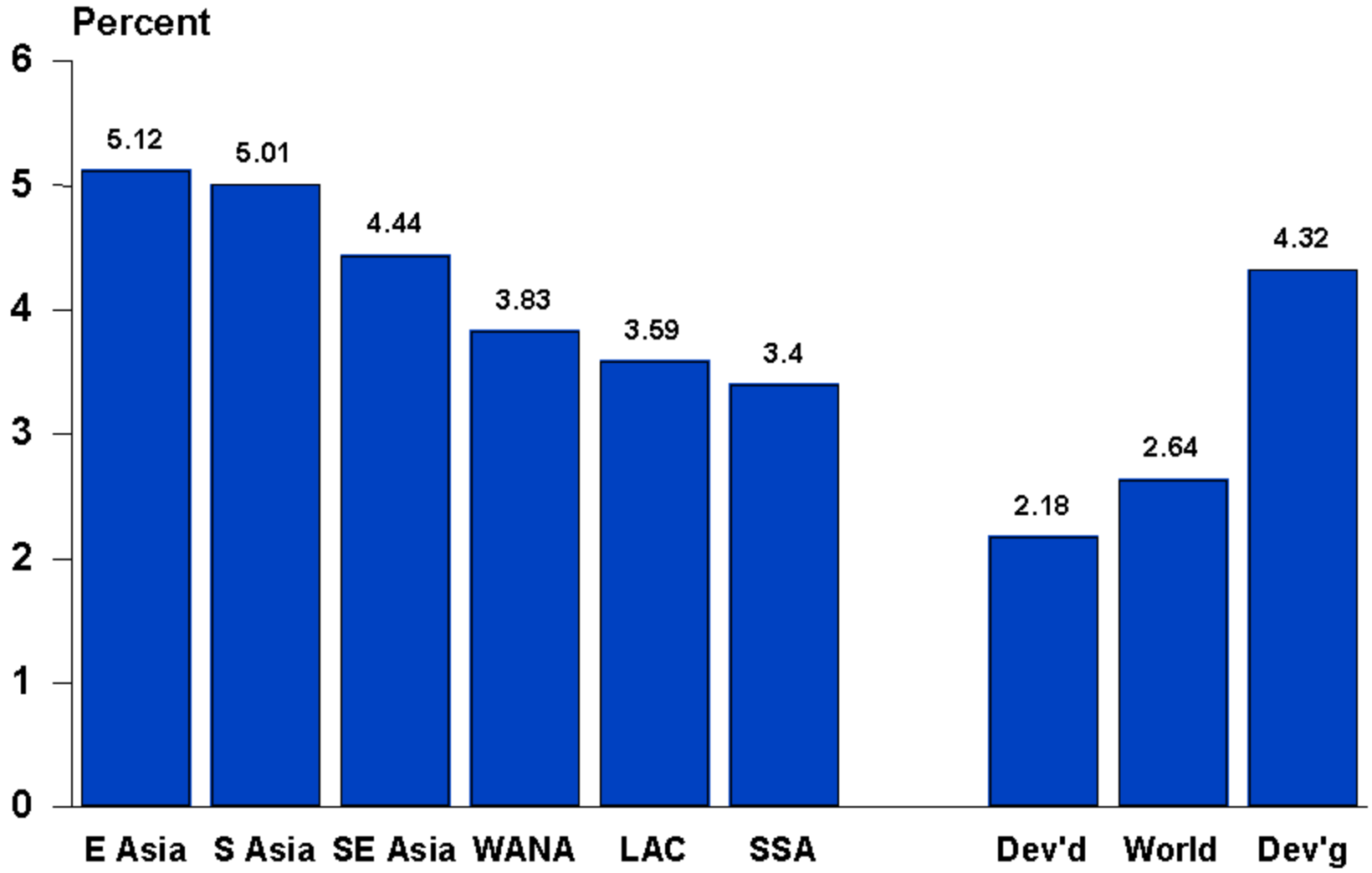
Source: Updated from P. Pinstrup-Andersen, R. Pandya-Lorch, and M.W. Rosegrant, *The World Food Situation: Recent Developments, Emerging Issues, and Long-Term Prospects* (Washington, D.C.: IFPRI, 1997).

Urban and rural population in developing countries, 1950–2020



Source: P. Pinstrup-Andersen, R. Pandya-Lorch, and M.W. Rosegrant, *World Food Prospects: Critical Issues for the Early Twenty-First Century* (Washington, D.C.: IFPRI, 1999).

Projected annual income growth rates, 1995–2020



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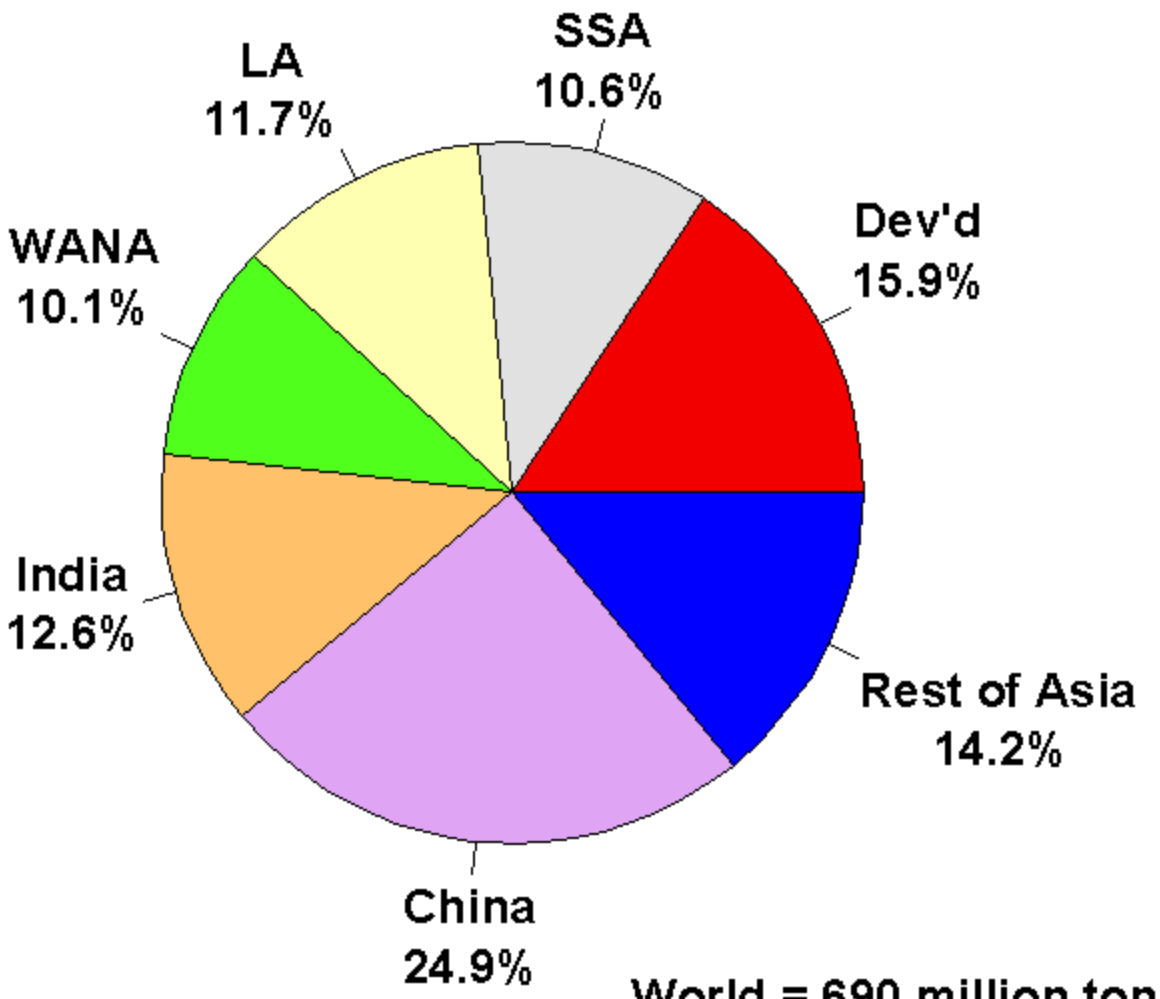
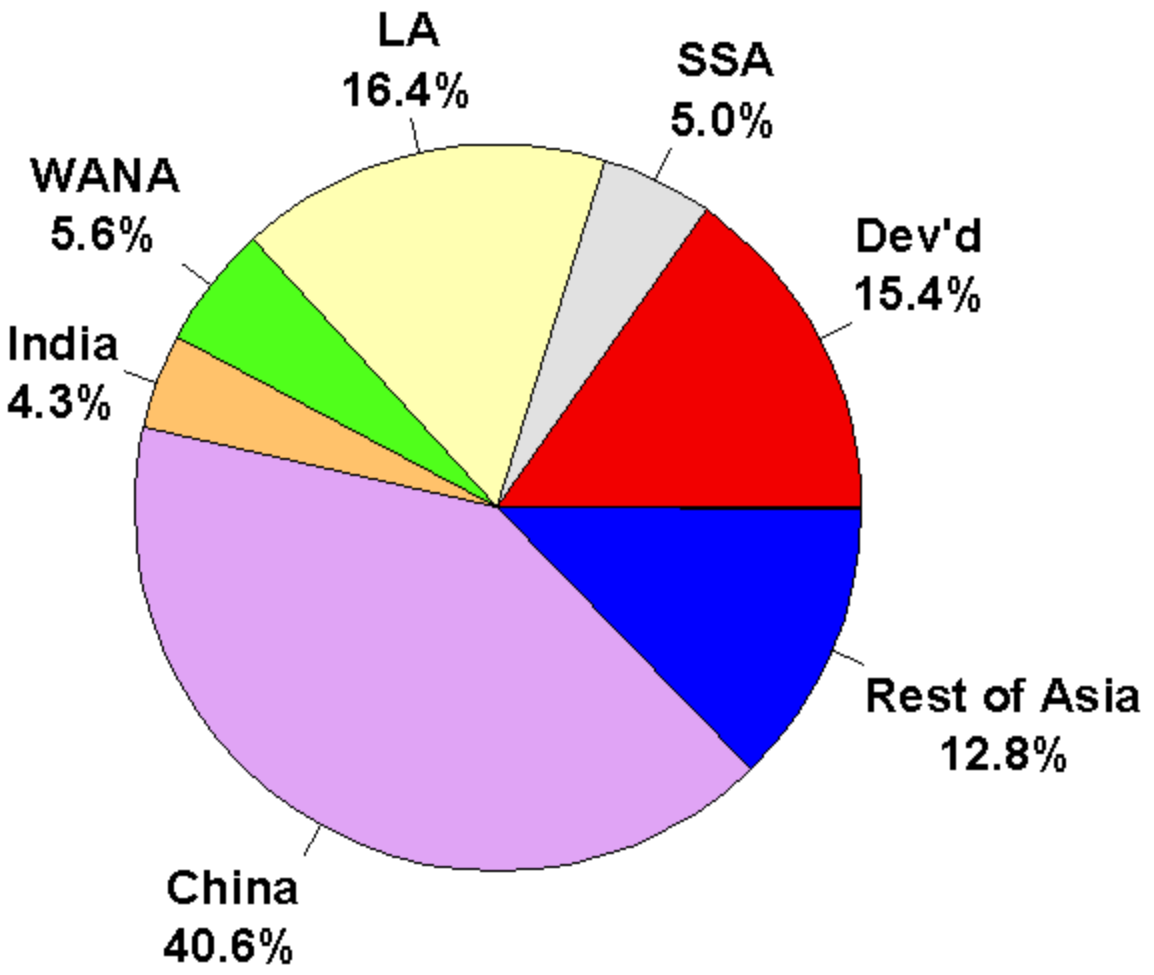
Share of increase in global demand for cereals, 1995–2020



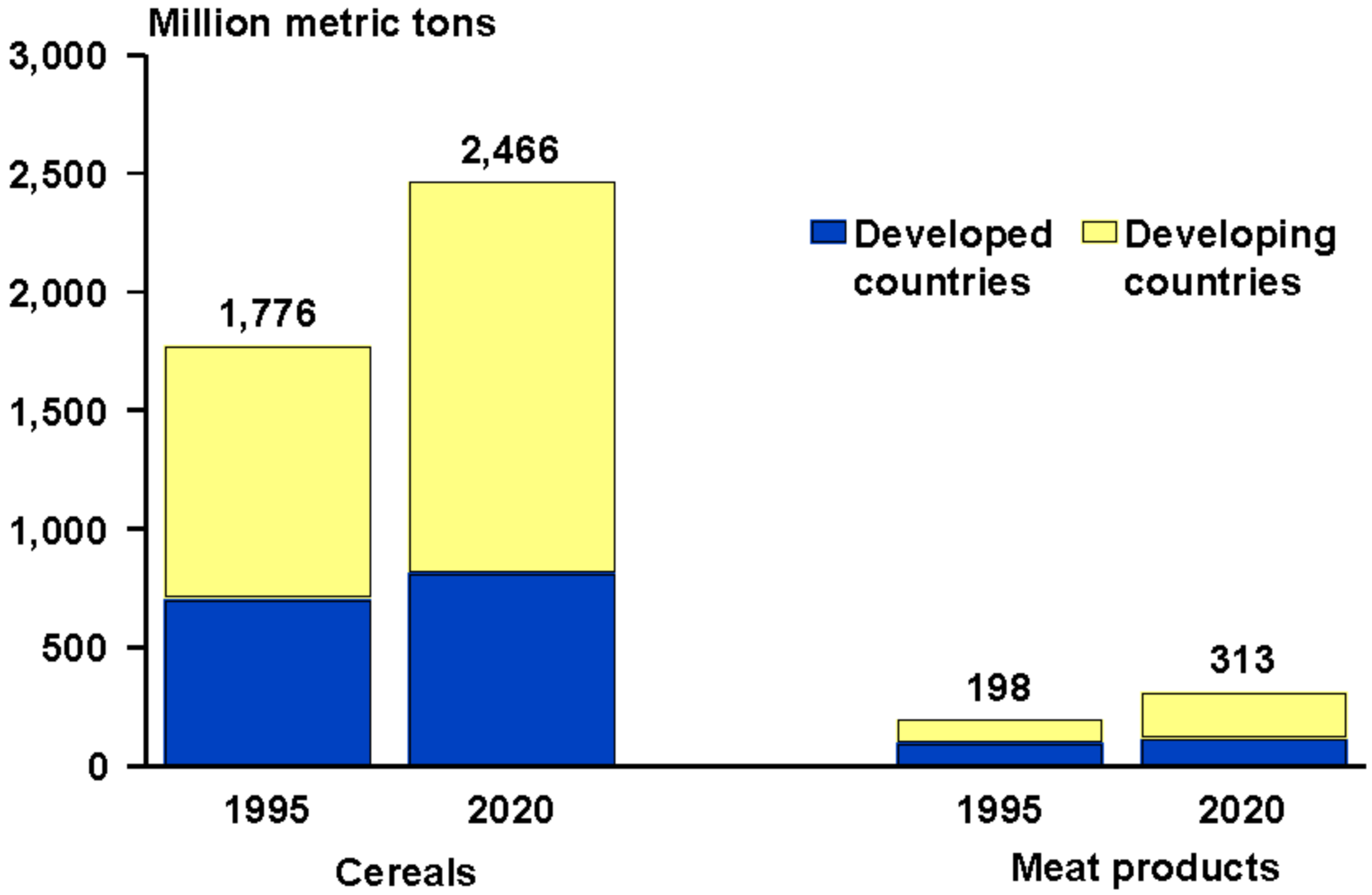
Source: P. Pinstrup-Andersen, R. Pandya-Lorch, and M.W. Rosegrant, *World Food Prospects: Critical Issues for the Early Twenty-First Century* (Washington, D.C.: IFPRI, 1999).

Share of increase in global demand for meat products, 1995–2020



Source: P. Pinstrup-Andersen, R. Pandya-Lorch, and M.W. Rosegrant, *World Food Prospects: Critical Issues for the Early Twenty-First Century* (Washington, D.C.: IFPRI, 1999).

Total demand for cereals and meat products, 1995–2020



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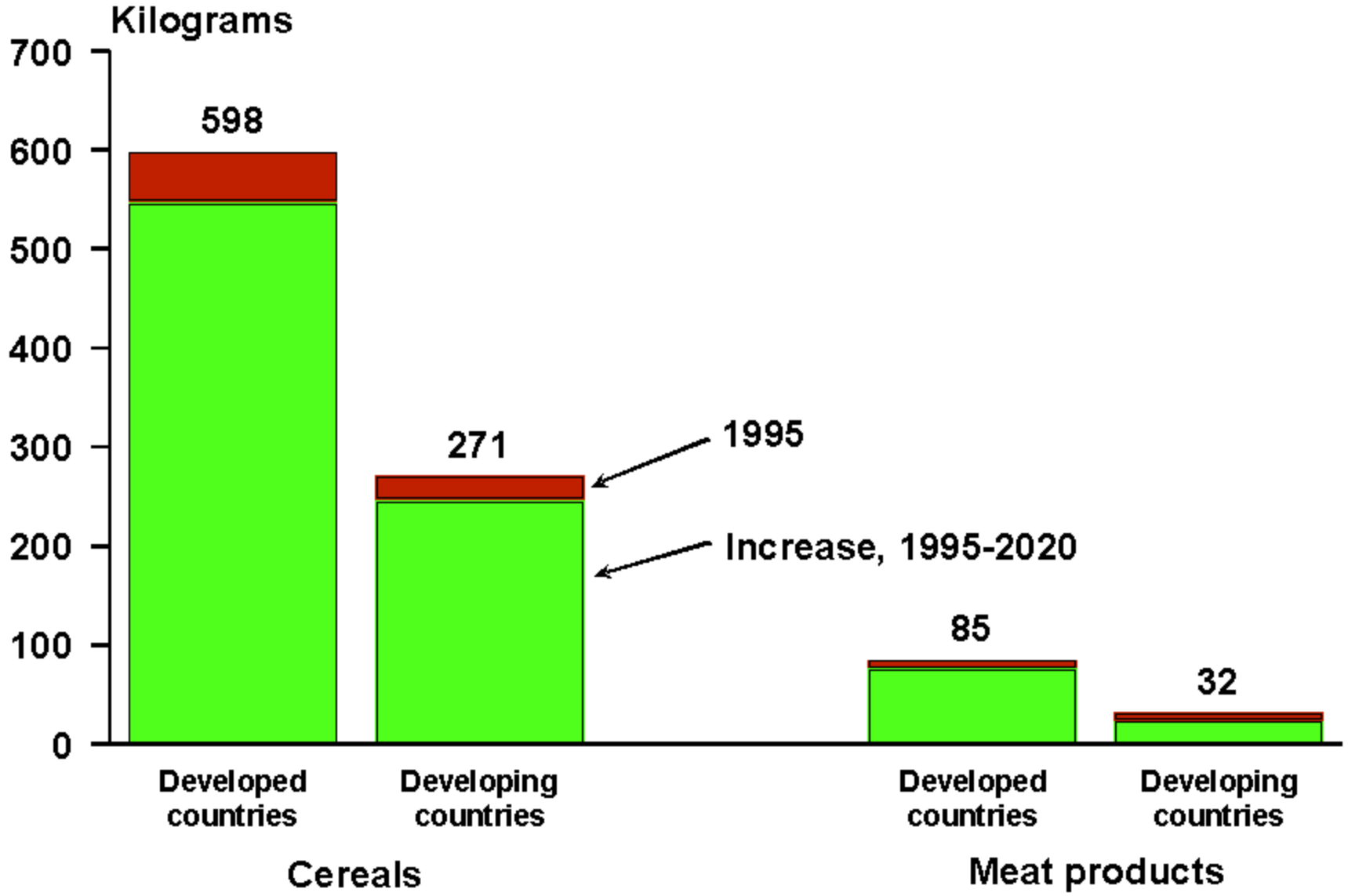
Per capita demand for cereals and meat products, 1995–2020



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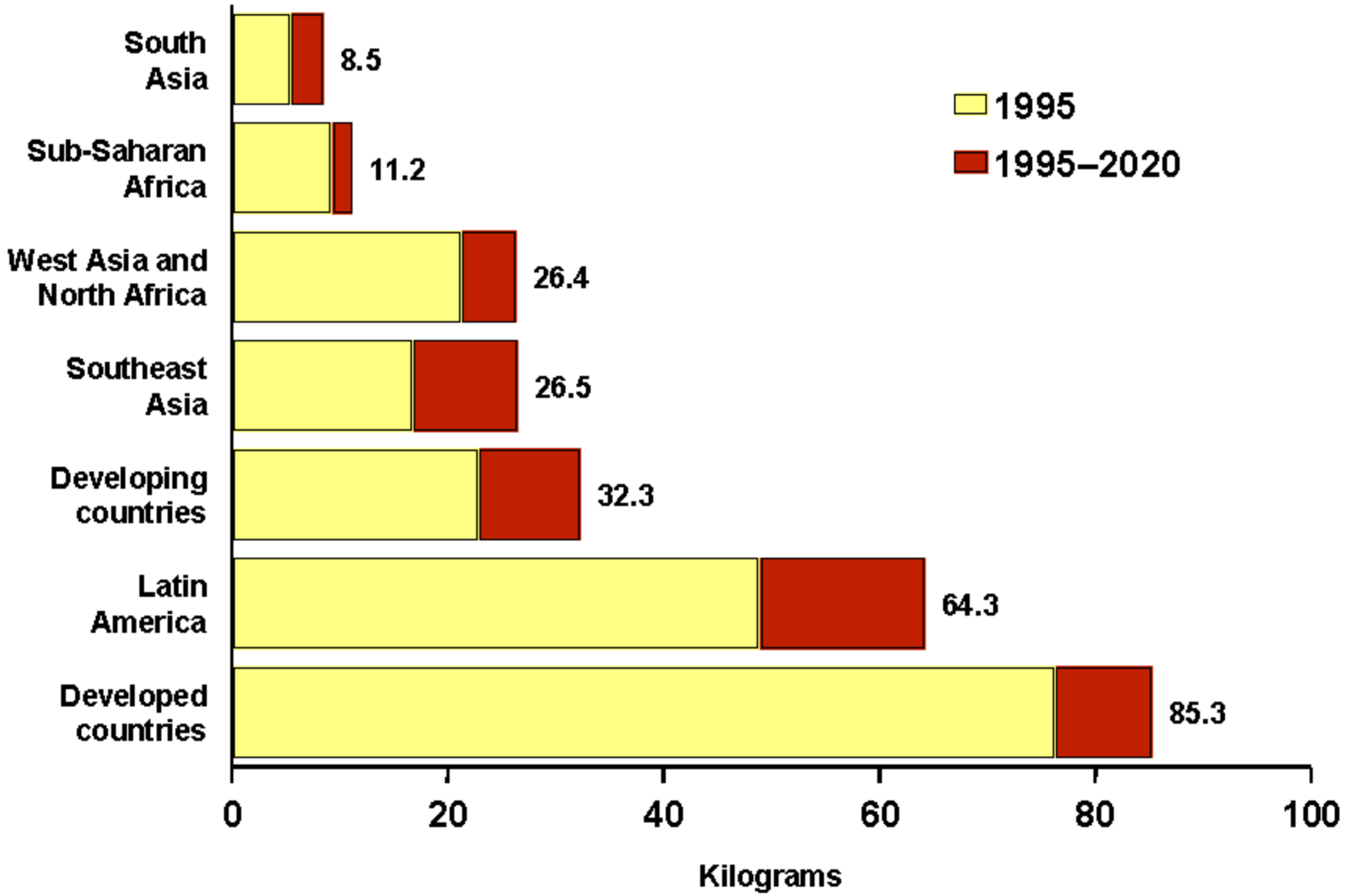
Per capita demand for meat products, 1995–2020



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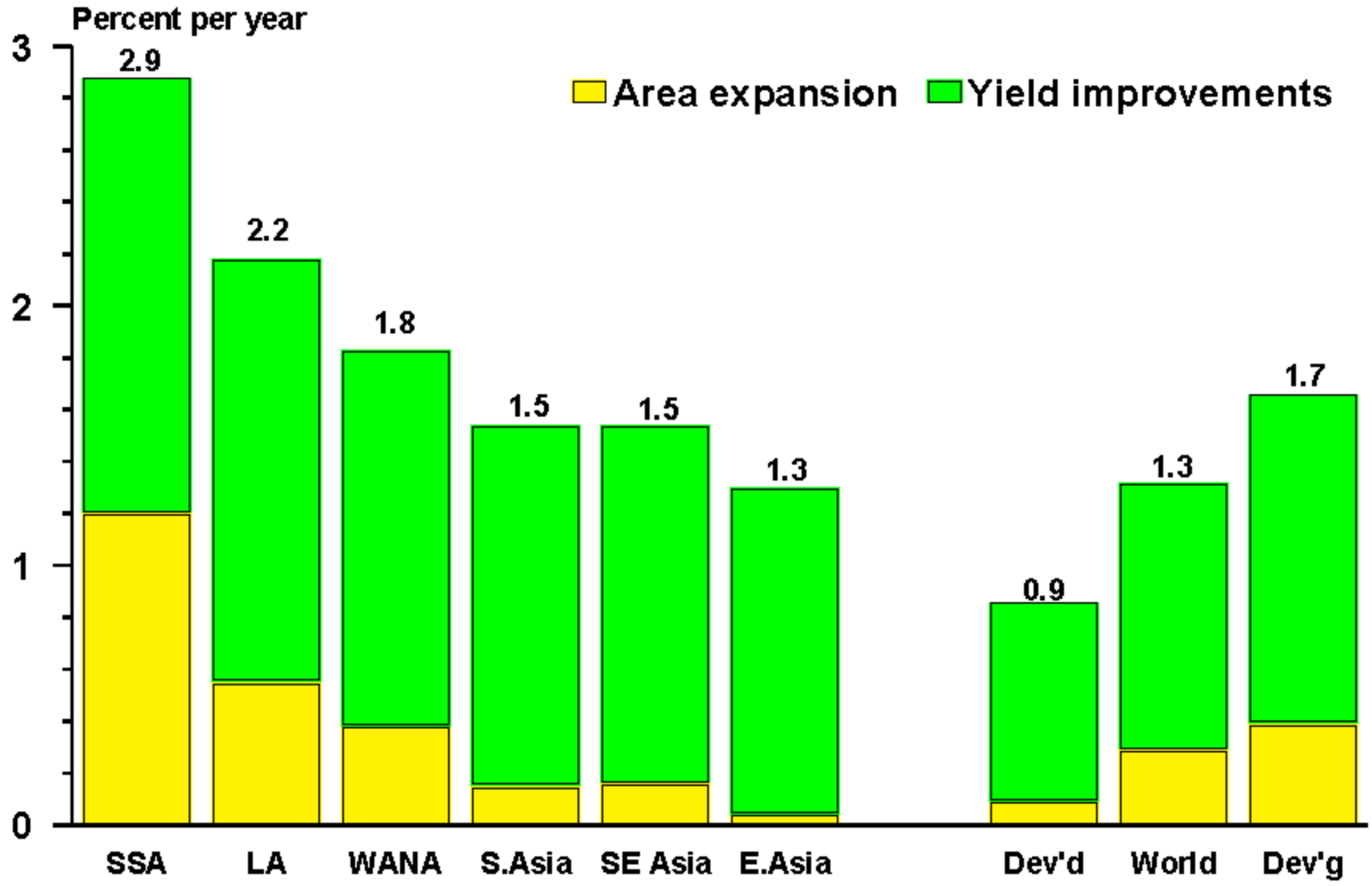
Sources of growth in cereal production, 1995–2020



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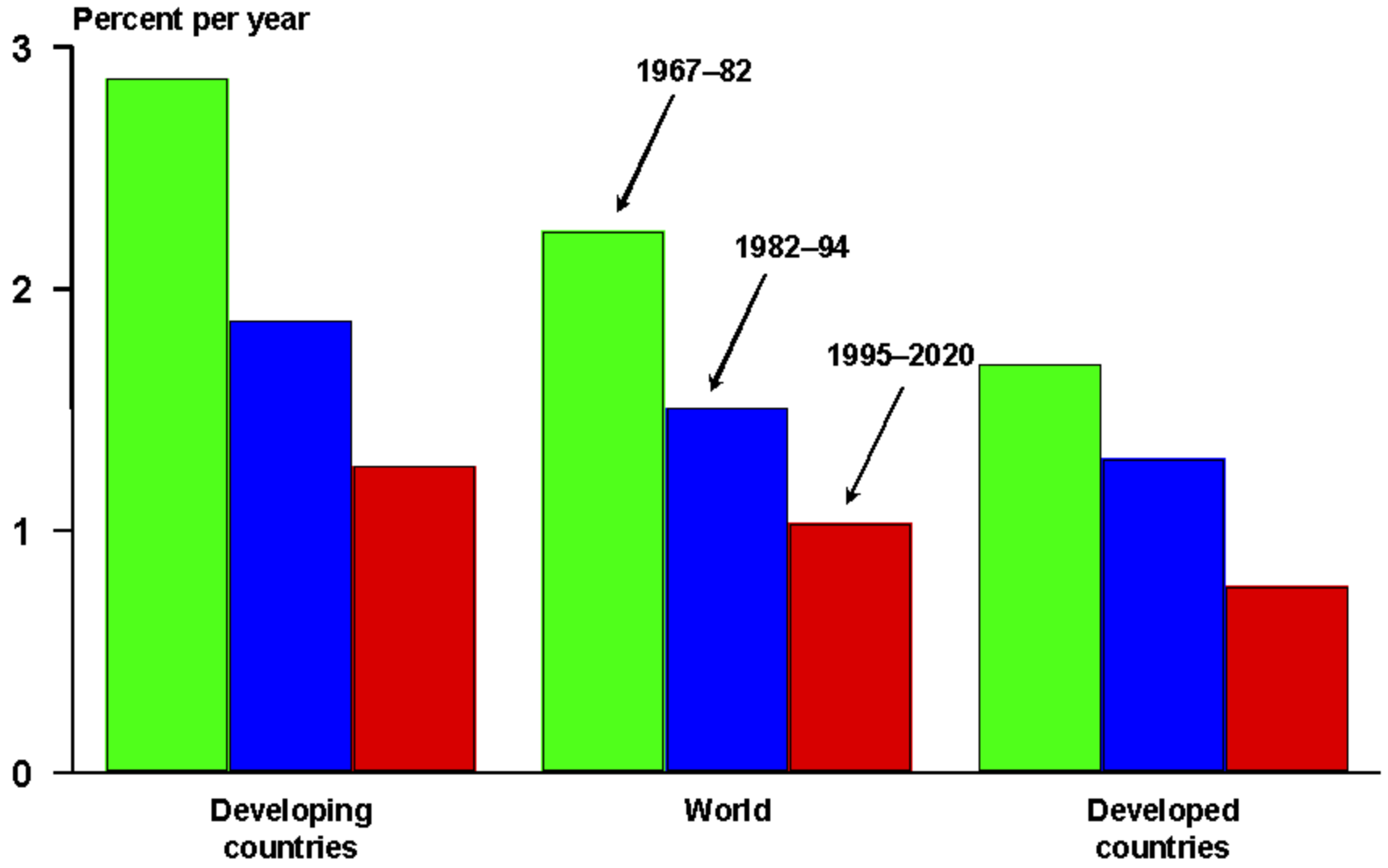
Annual growth in cereal yields, 1967–82, 1982–94, and 1995–2020



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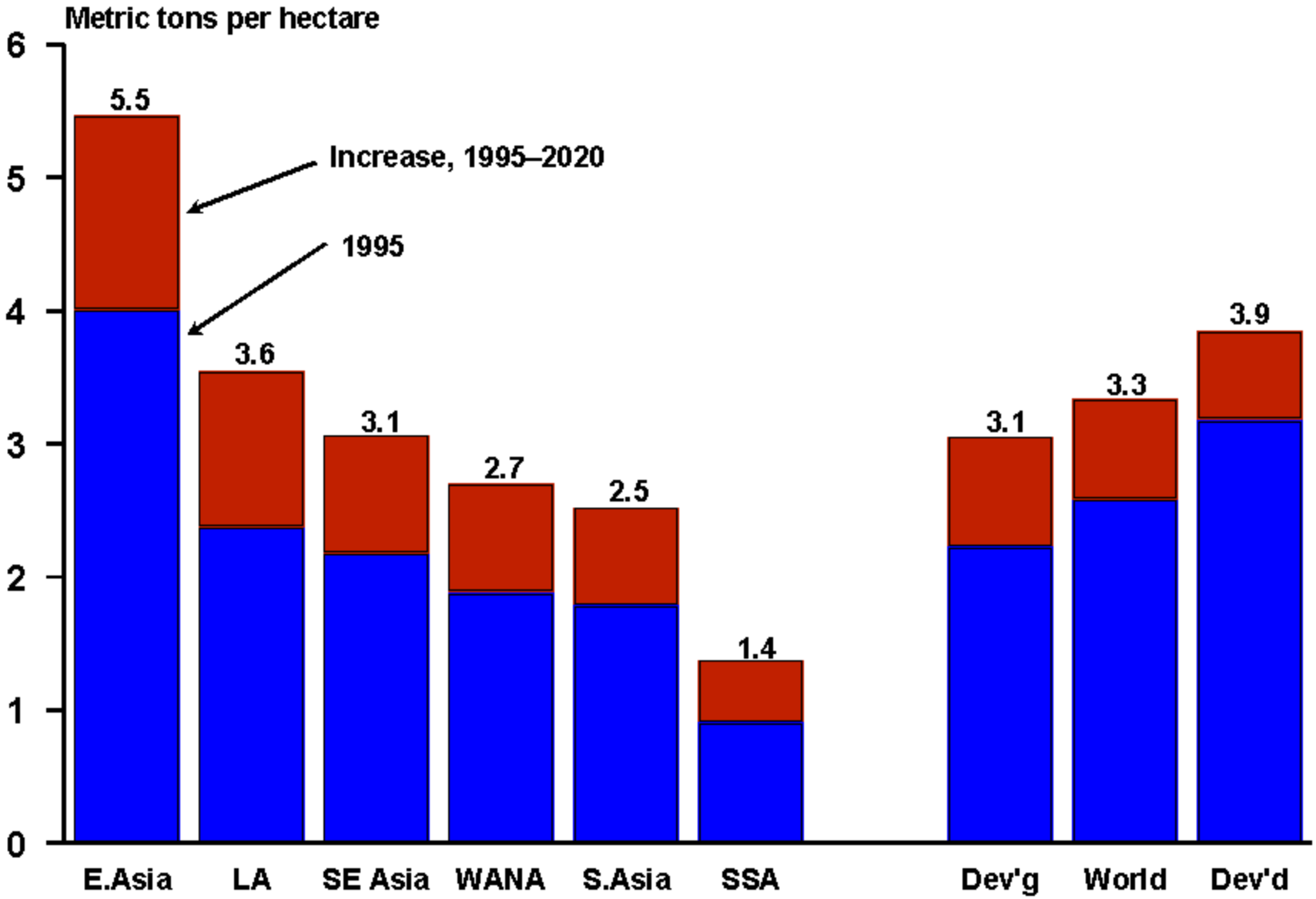
Cereal yields, 1995–2020



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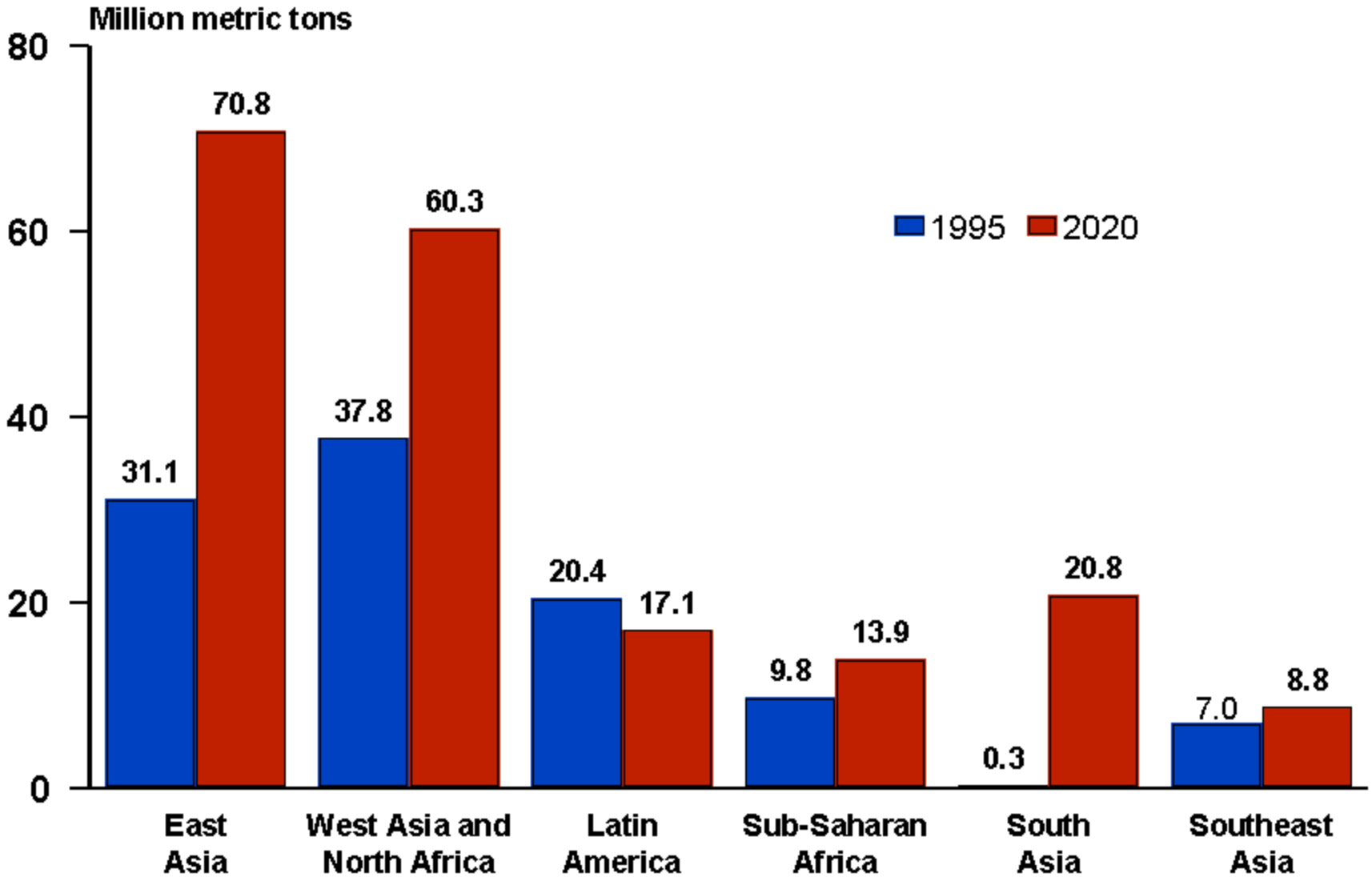
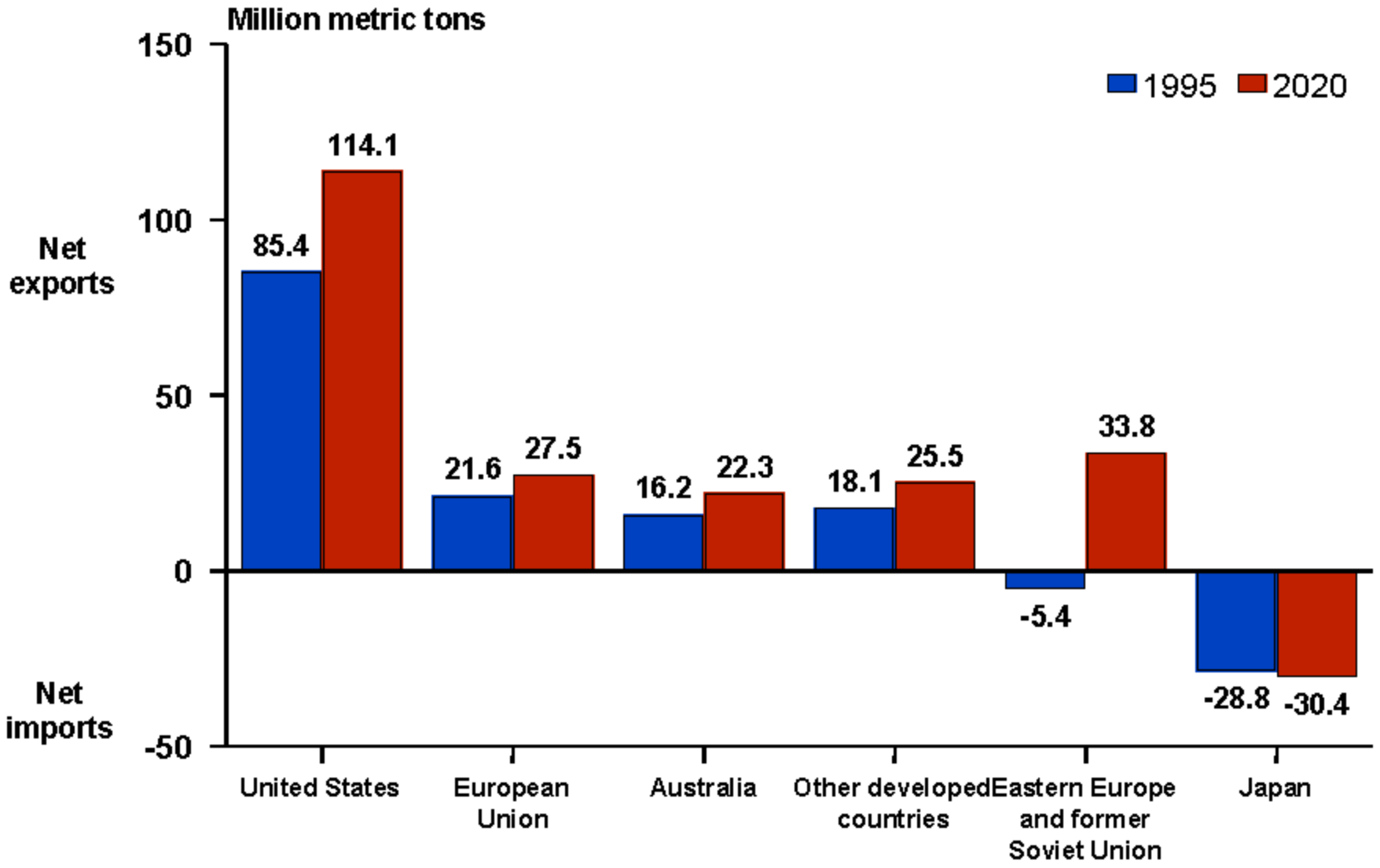
Net cereal imports of major developing regions, 1995 and 2020



Source: IFPRI IMPACT simulations, July 1999.

Net trade in cereal of developed countries, 1995 and 2020



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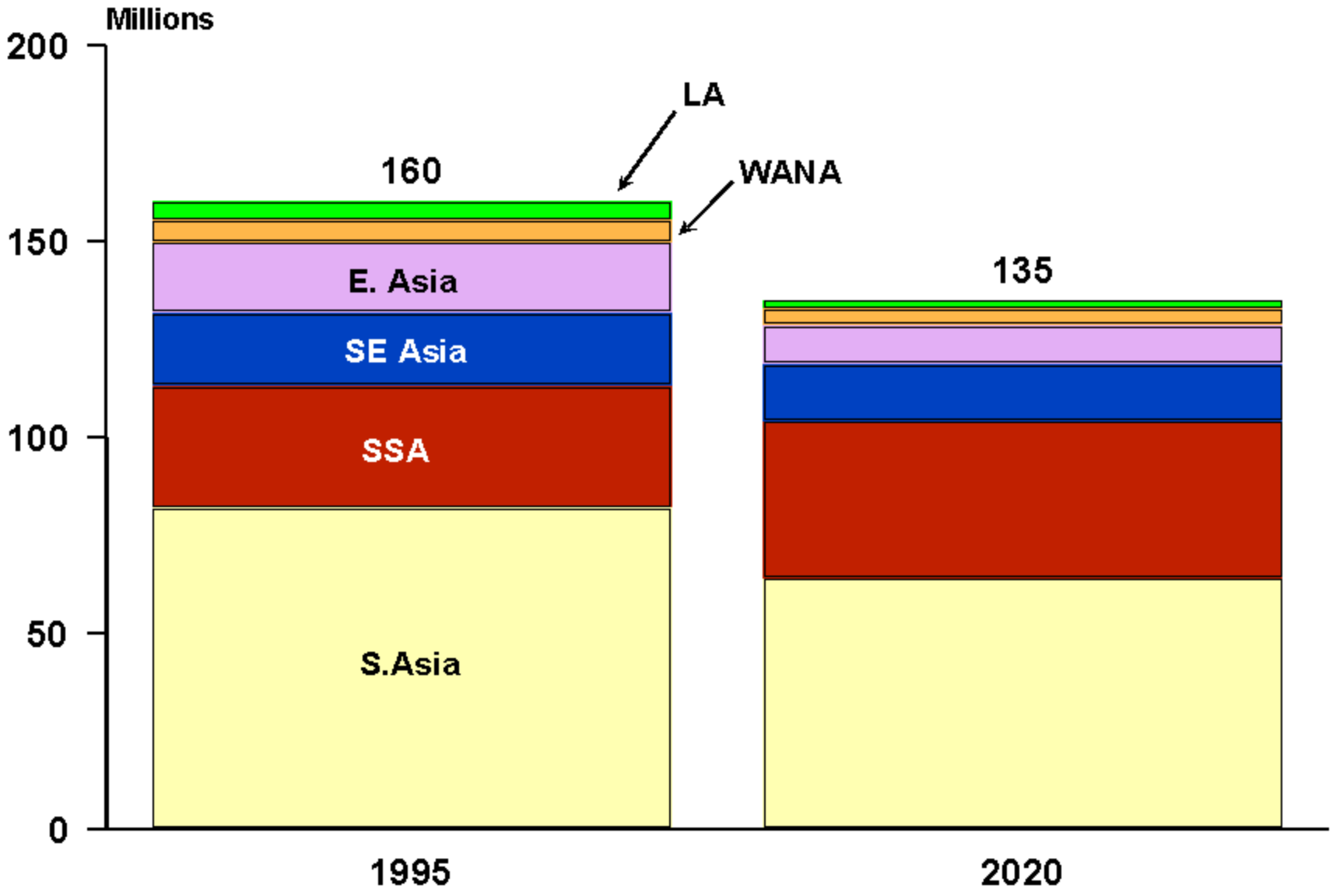
Number of malnourished children, 1995 and 2020



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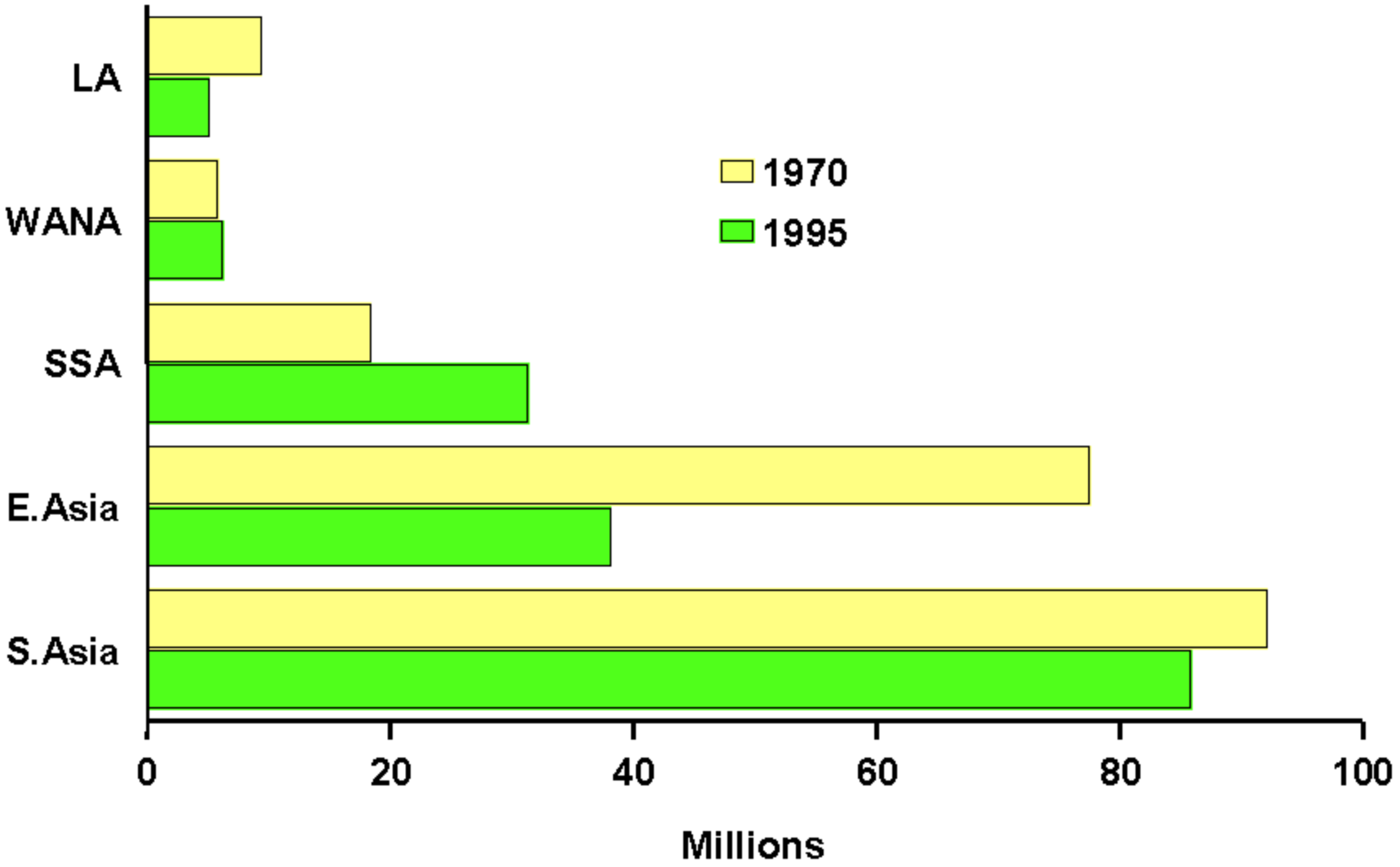
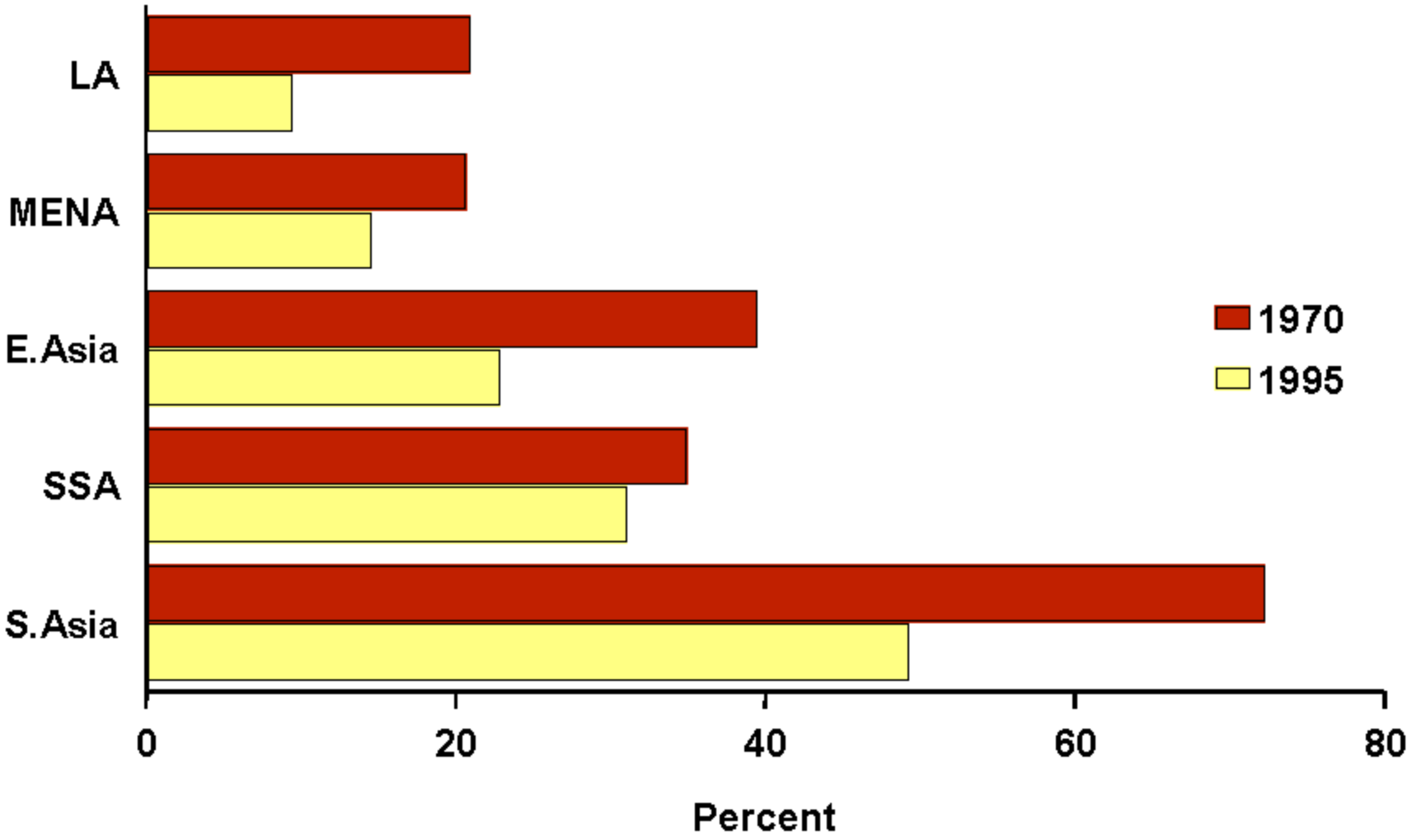
Trends in the number of malnourished children in developing countries, 1970–95



Source: L. Smith and L. Haddad, *Overcoming Child Malnutrition in Developing Countries: Past Achievements and Future Choices* (Washington, D.C.: IFPRI, 2000).

Trends in the prevalence of child malnutrition in developing countries, 1970–95



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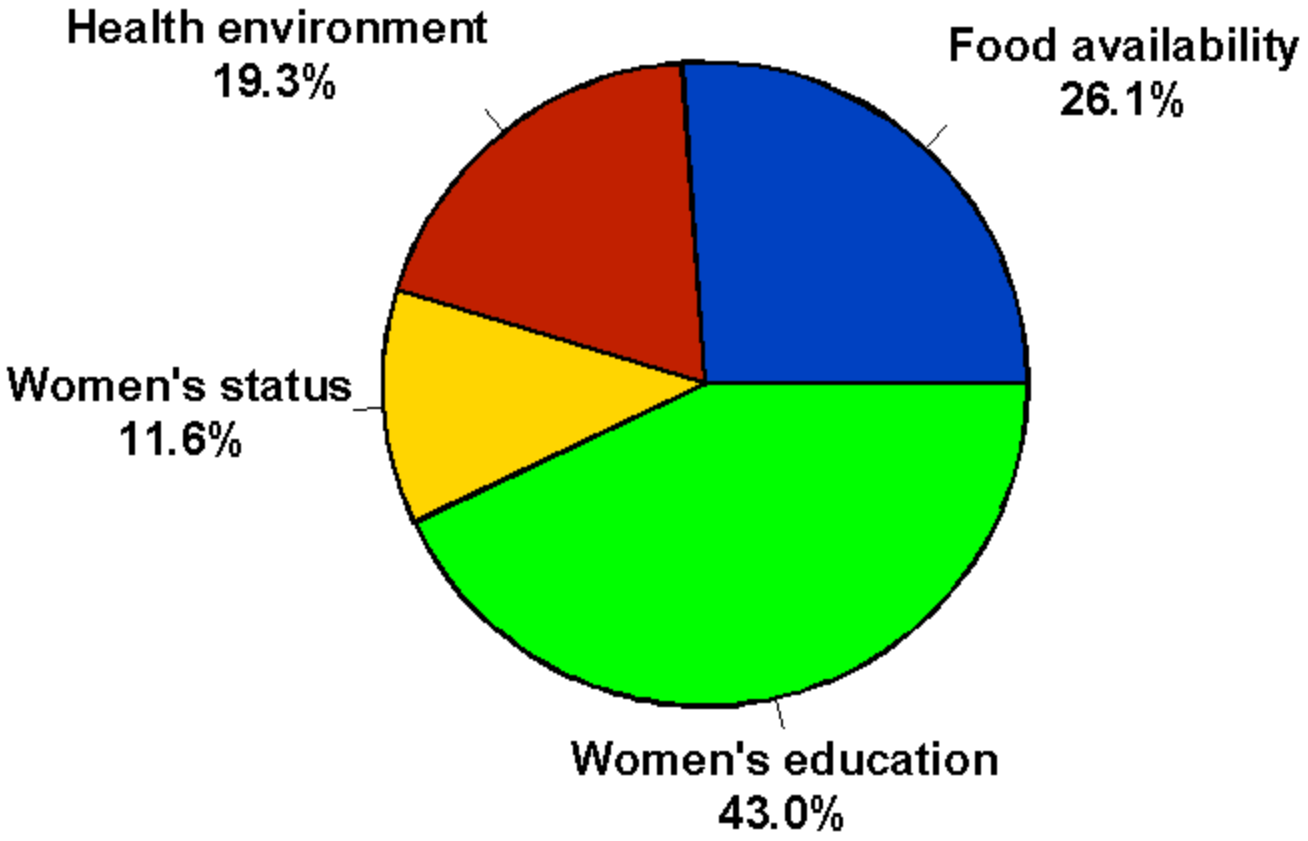
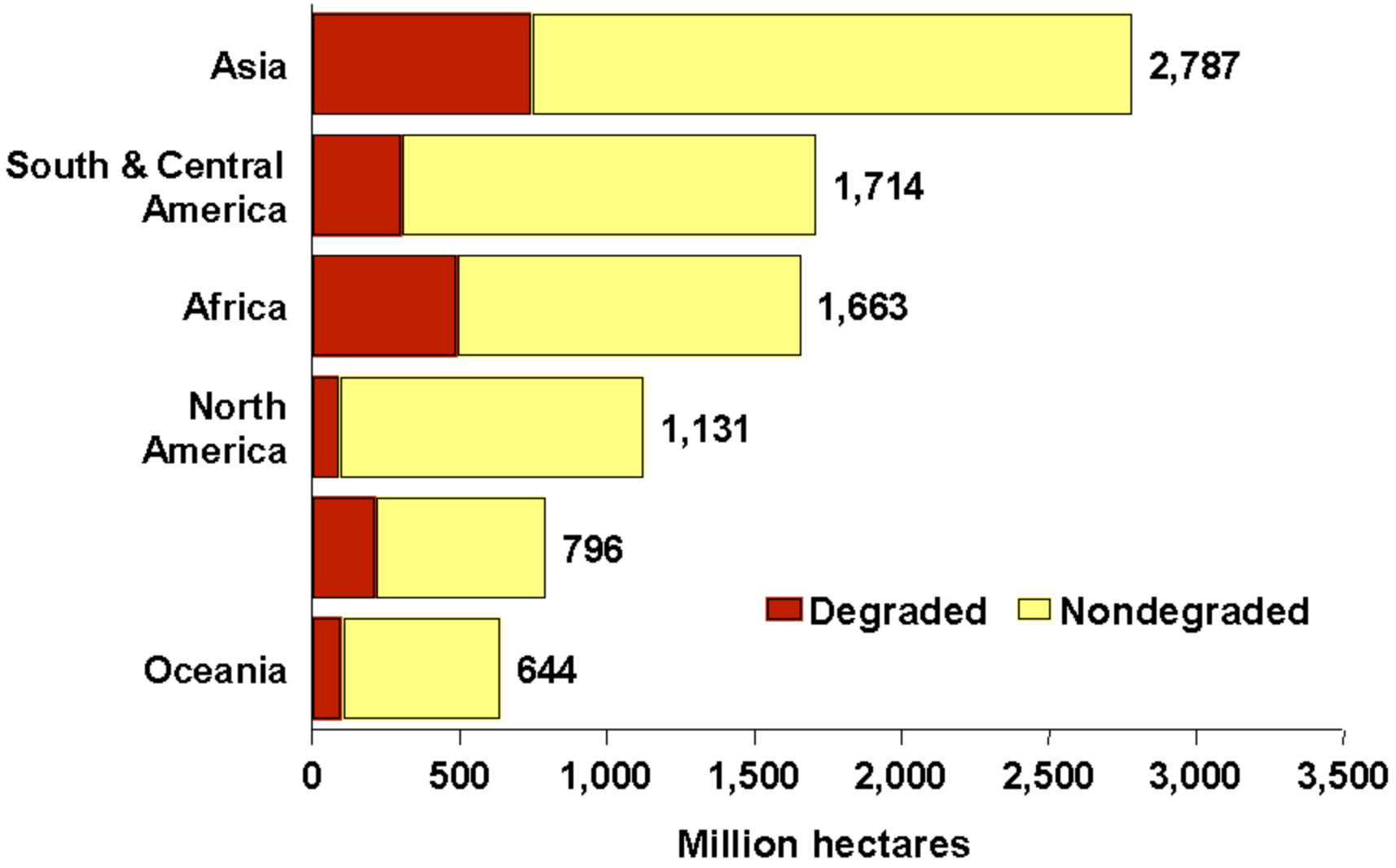
Estimated contribution of major determinants to reductions in child malnutrition, 1970–95



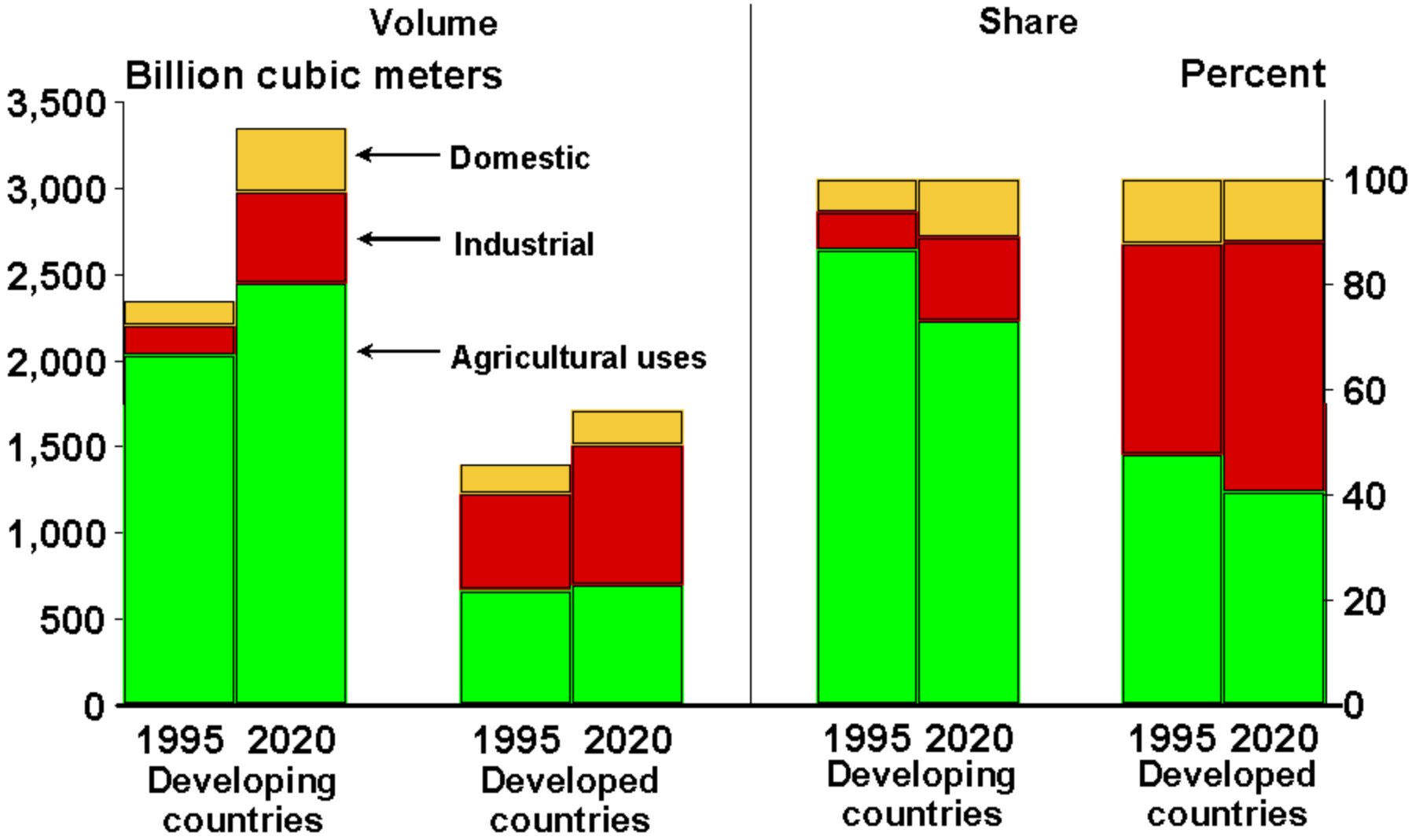
Source: L. Smith and L. Haddad, Overcoming Child Malnutrition in Developing Countries: Past Achievements and Future Choices (Washington, D.C.: IFPRI, 2000).
Note: Malnourished children refers to underweight children.

Global estimates of soil degradation



Source: S. Scherr, *Soil degradation: A threat to developing-country food security in 2020?* (Washington, D.C.: IFPRI, 1999).

Water withdrawals for domestic, industrial, and agricultural uses, 1995 and 2020



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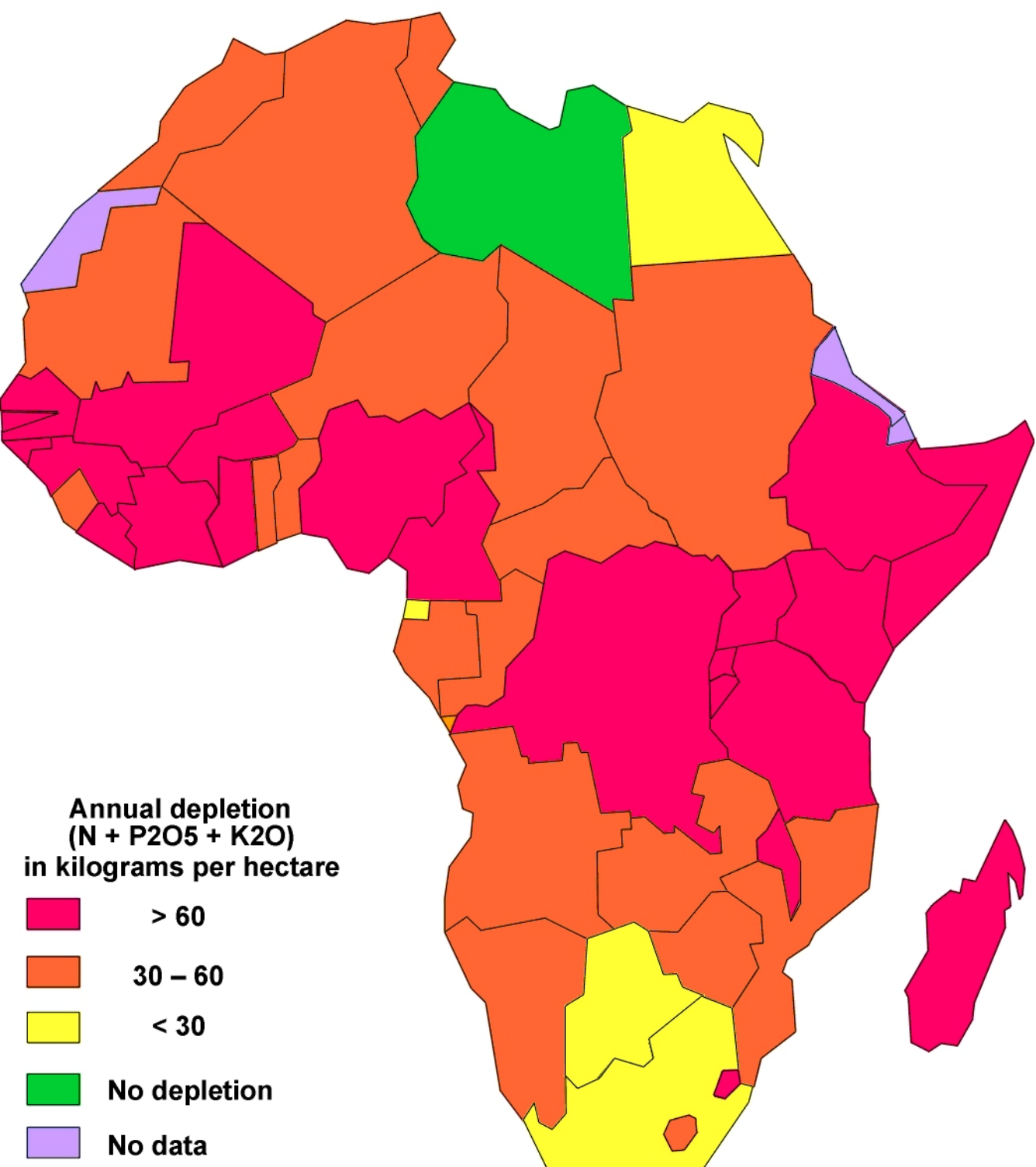
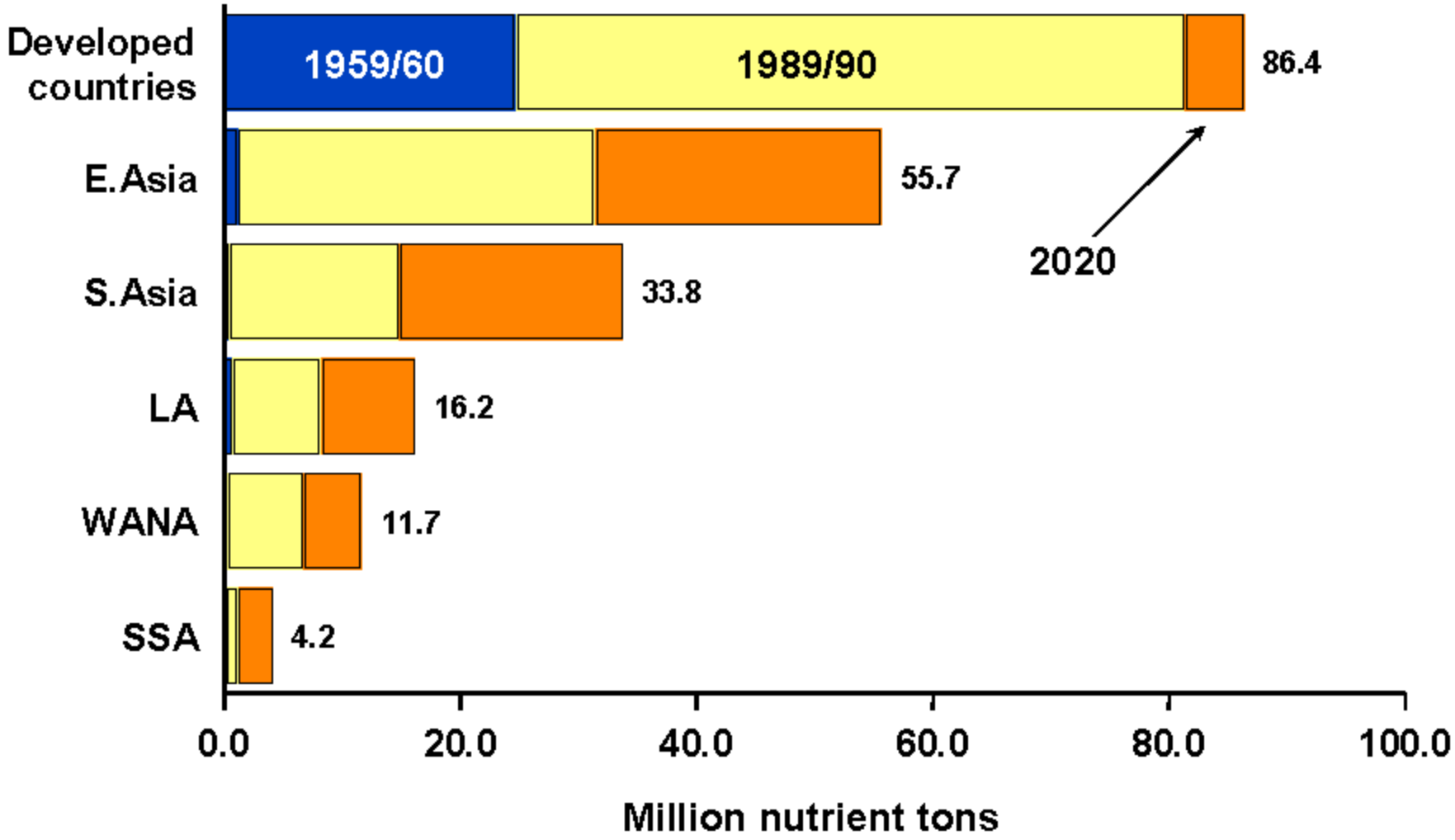
Average annual nutrient depletion (NPK) in Africa, 1993–95



Source: J. Henao and C. Baanante, "Nutrient Depletion in the Agricultural Soils of Africa," 2020 Vision Brief 62 (Washington, D.C.: International Food Policy Research Institute, 1999).

Global fertilizer use, 1959/60, 1989/90, and 2020



Source: B. Bumb and C. Baanante, "World Trends in Fertilizer Use and Projections to 2020," 2020 Brief 38 (Washington, D.C.: IFPRI, 1996); B. Bumb and C. Baanante, The Role of Fertilizer in Sustaining Food Security and Protecting the Environment in 2020 (Washington, D.C.: IFPRI, 1996).

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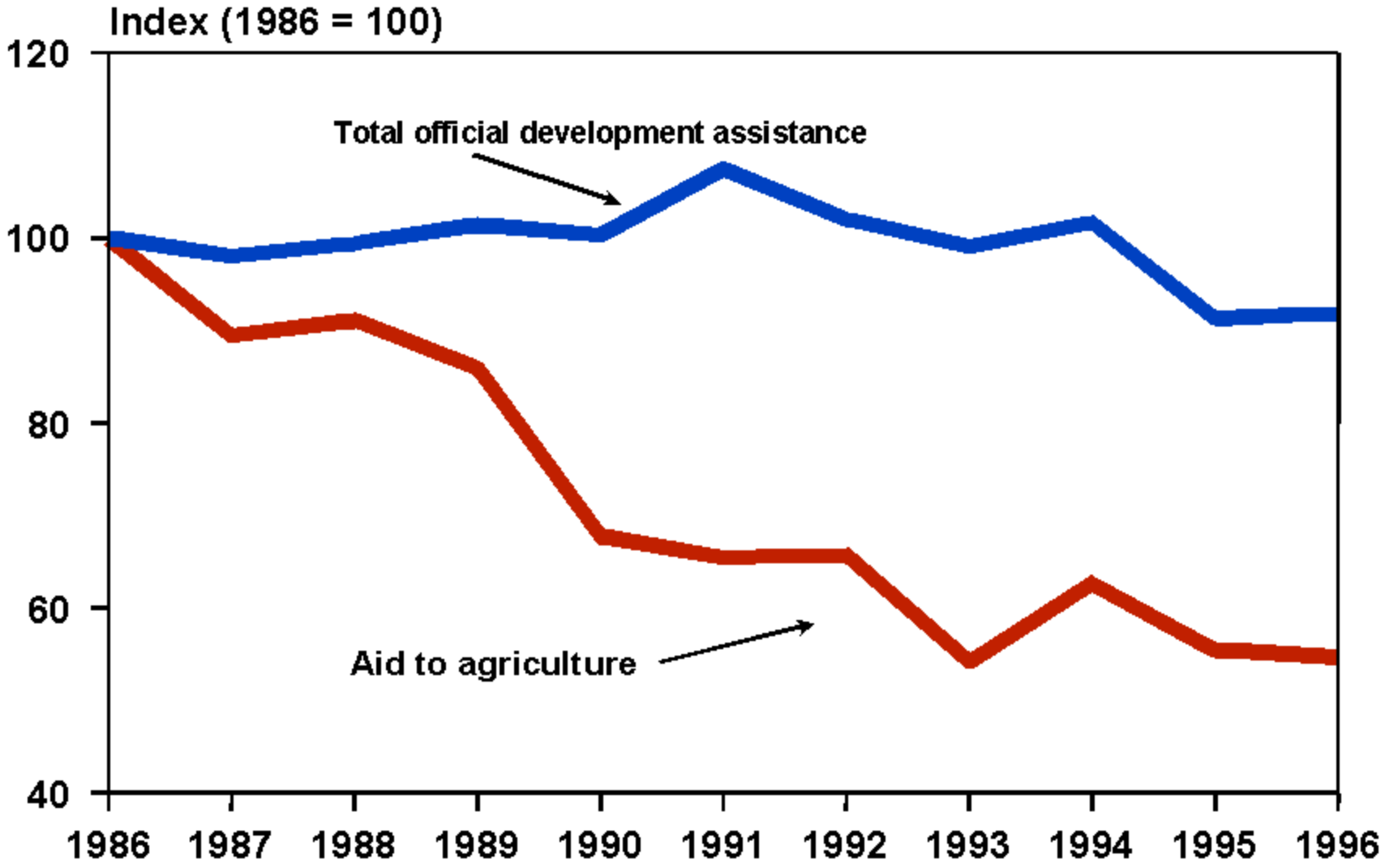
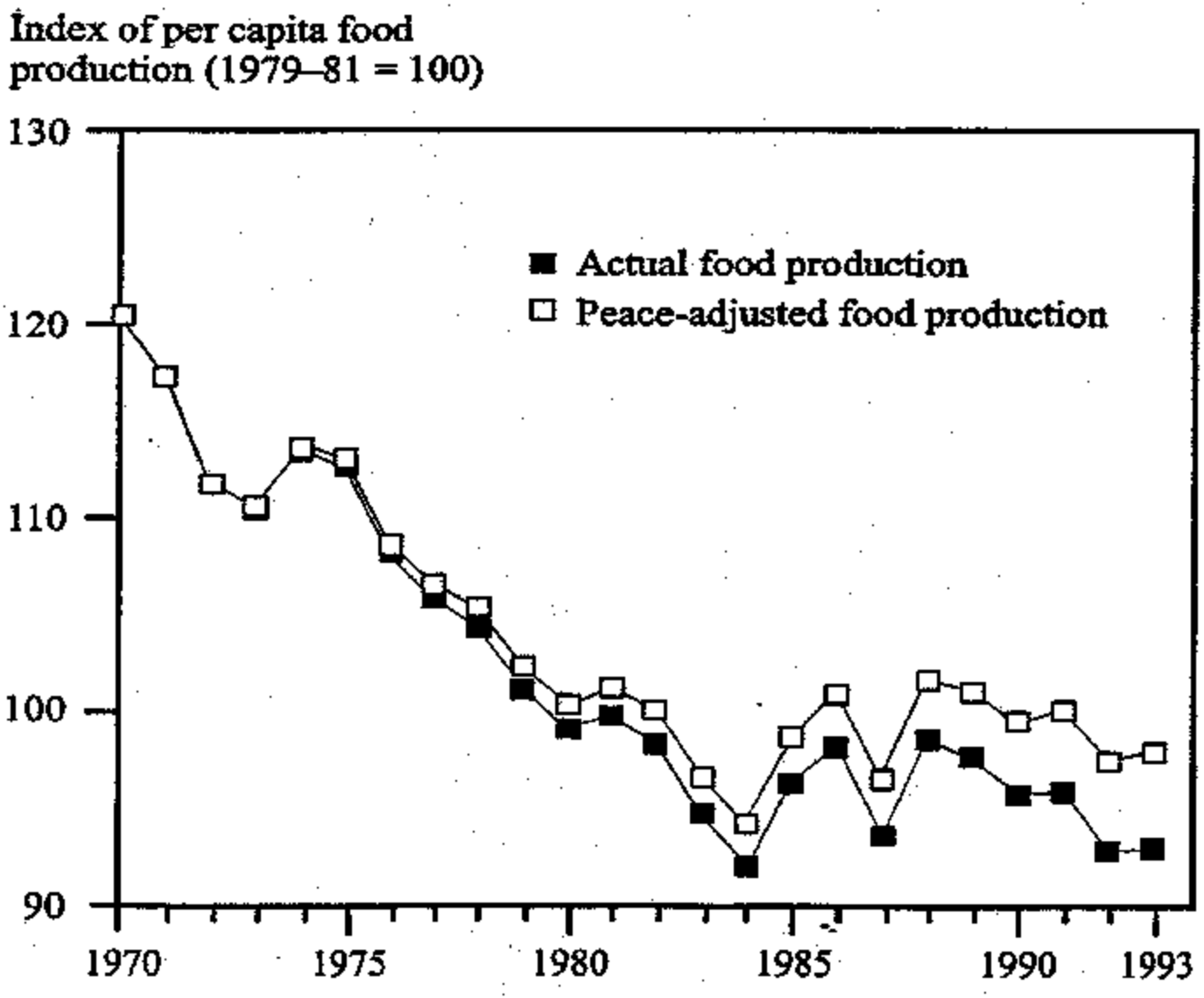


Source: P. Pinstrup-Andersen and M.J. Cohen, "Aid to Developing-Country Agriculture: Investing in Poverty Reduction and New Export Opportunities," 2020 Brief 56 (Washington, D.C.: IFPRI, 1998).

Actual and peace-adjusted food production growth in Sub-Saharan Africa, 1970–93



Source: E. Messer, M.J. Cohen, and J. D'Costa, *Food from Peace: Breaking the Links Between Conflict and Hunger* (Washington, D.C.: IFPRI, 1998).