Baseline Projections: Global Food Markets

Mark Rosegrant
Senior Research Fellow, Environmental and Production Technology
International Food Policy Research Institute

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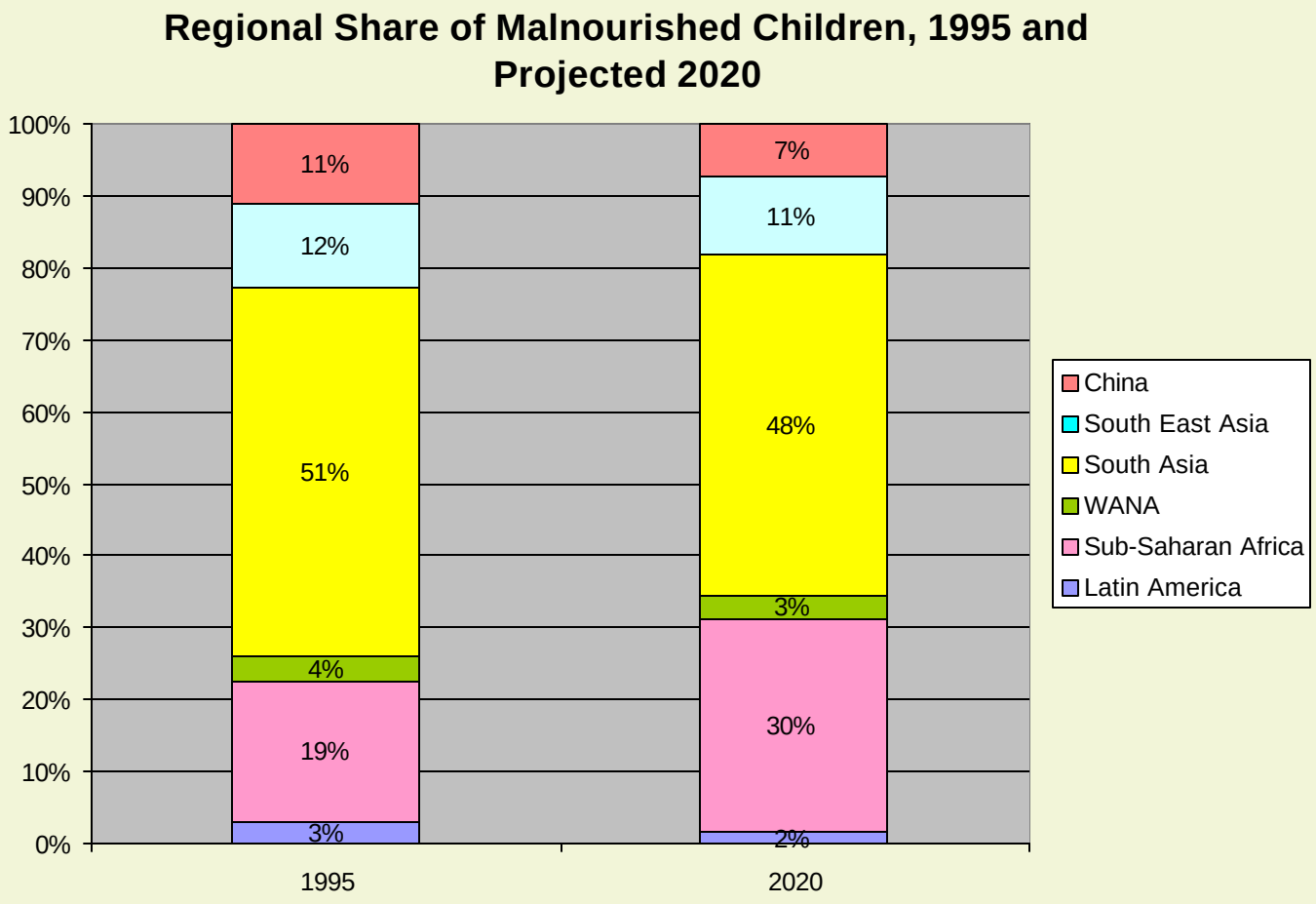
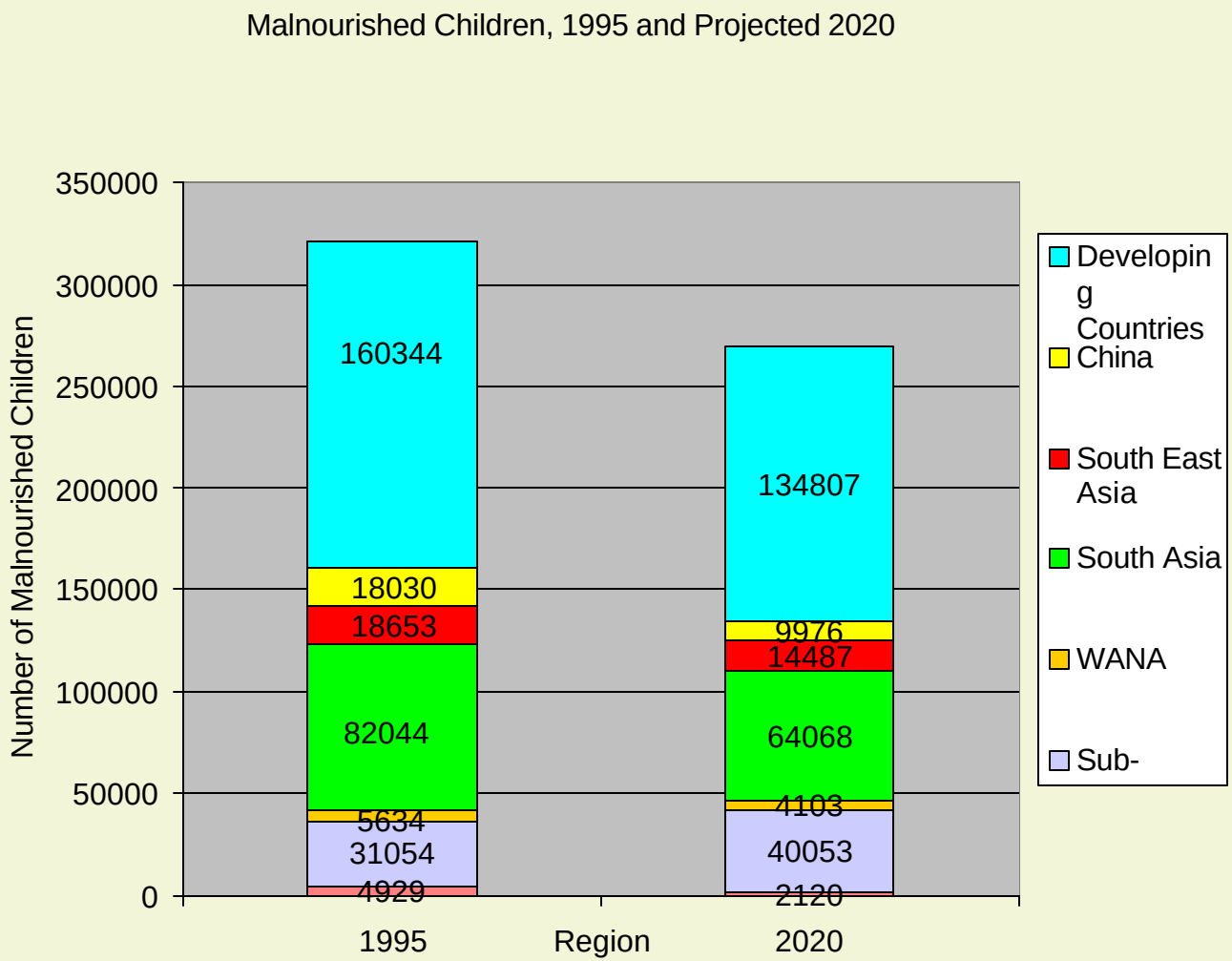
Child Malnourishment Trends, 1995-2020



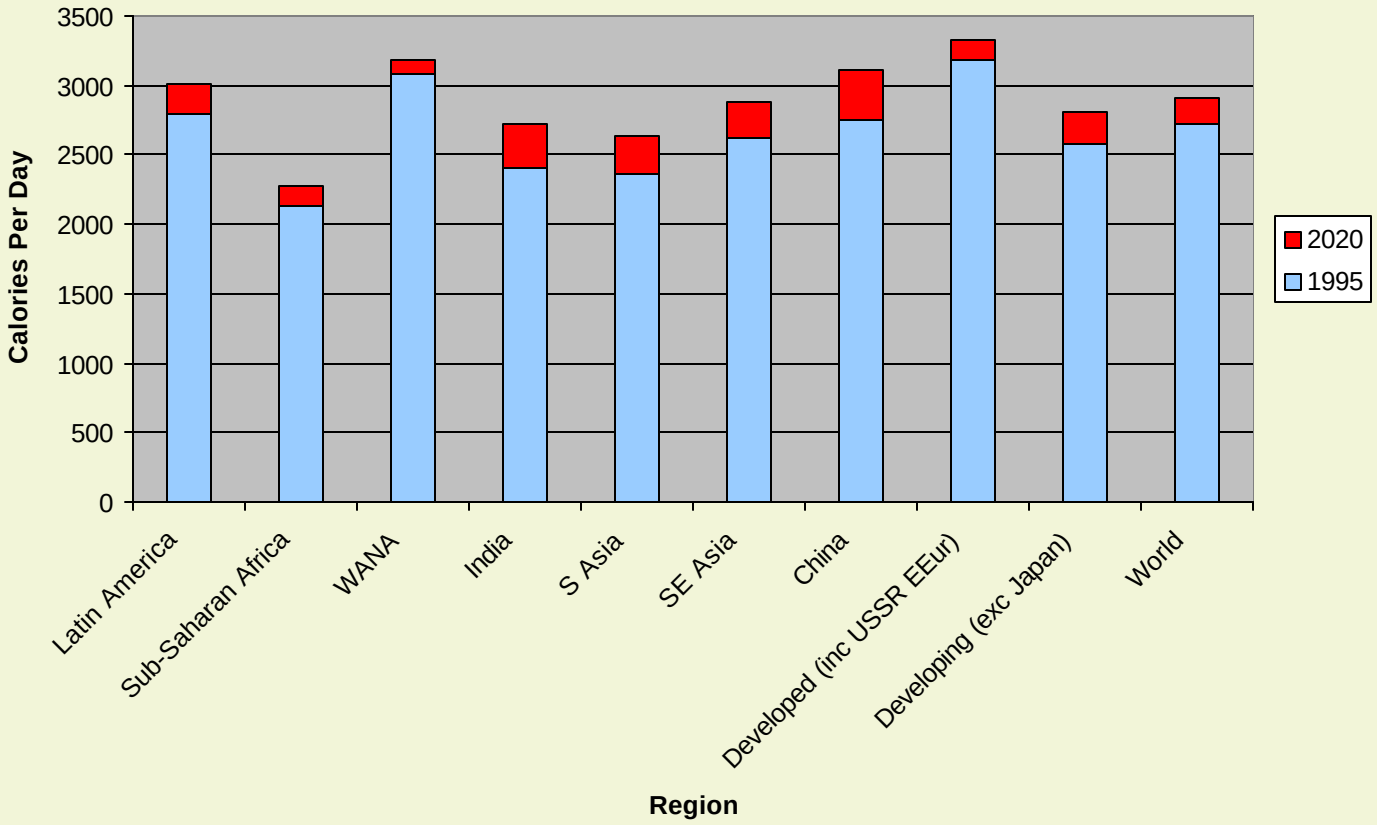
Malnourished Children



Child Malnourishment Trends, 1995-2020

- No. of malnourished children to decline 16 percent (26 million children) worldwide.
- Latin America largest decline at 67 percent, from 5 million to 2 million.
- Sub-Saharan Africa to increase by 29 percent, from 31 million to 40 million.
- India to decline by 28 percent, although still to remain home to 45 million in 2020, or 33 percent of the world total.

Daily Per Capita Calorie Availability, 1995 and 2020



IMPACT Model Overview

- 36 countries and regions
- 16 commodities
  - Includes all cereals, soybeans, roots & tubers, meats, milk, eggs, oils, oilcakes, and meals
  - Model specified as a set of country-level supply and demand equations

IMPACT Model Structure

- **Impact is a partial equilibrium agricultural sector model with inter-sectoral linkages.**
- **Exogenously introduced shocks in non-agricultural GDP affect yield and area/numbers growth through an inter-sectoral multiplier.**

IMPACT Model Structure

- **Country-level models are linked to the rest of the world through trade.**
- **World food prices are determined annually at levels that clear international commodity markets.**

Characteristics of IMPACT Commodities: Crops (1)

- Area is a function of crop prices and irrigation investment.
- Yield is a function of crop price, input price, irrigation investment, and technological change.
  - Technological change is estimated based on agricultural research investment.

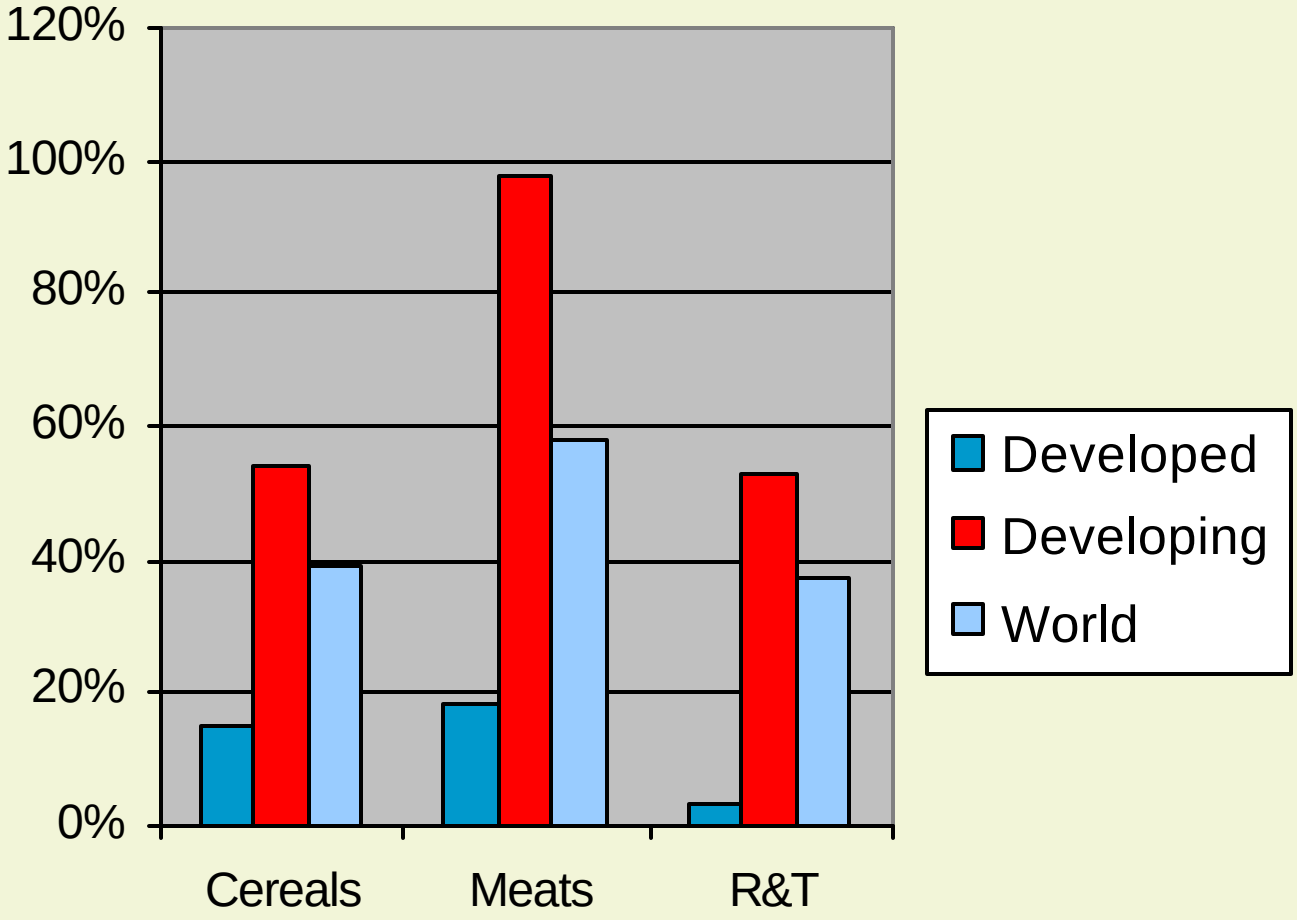
Characteristics of IMPACT Commodities: Crops (2)

- **Food demand is a function of commodity prices, income, and population.**
- **Feed demand is a function of livestock production, feed prices, and feeding efficiency.**

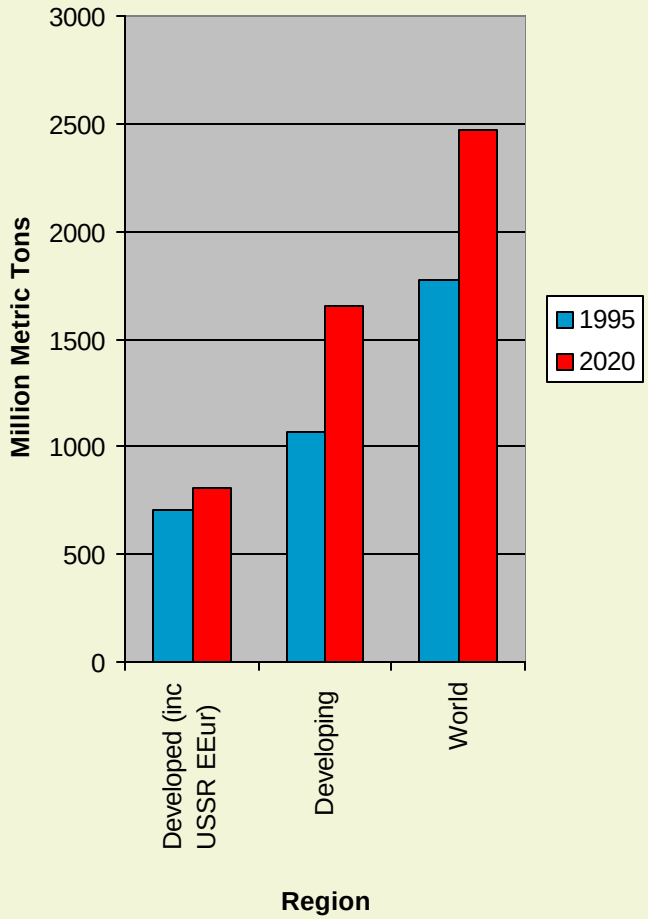
Factors Assessed Through IMPACT Scenario Analysis

- Changes in population and income growth.
- Rate of growth in crop and livestock yield and production.
- Agricultural research, irrigation, and other investment.
- Price policies for agricultural commodities.
- Supply and demand elasticities.
- Feed ratios / technology.

Commodity Demand Increases, 1995 to 2020

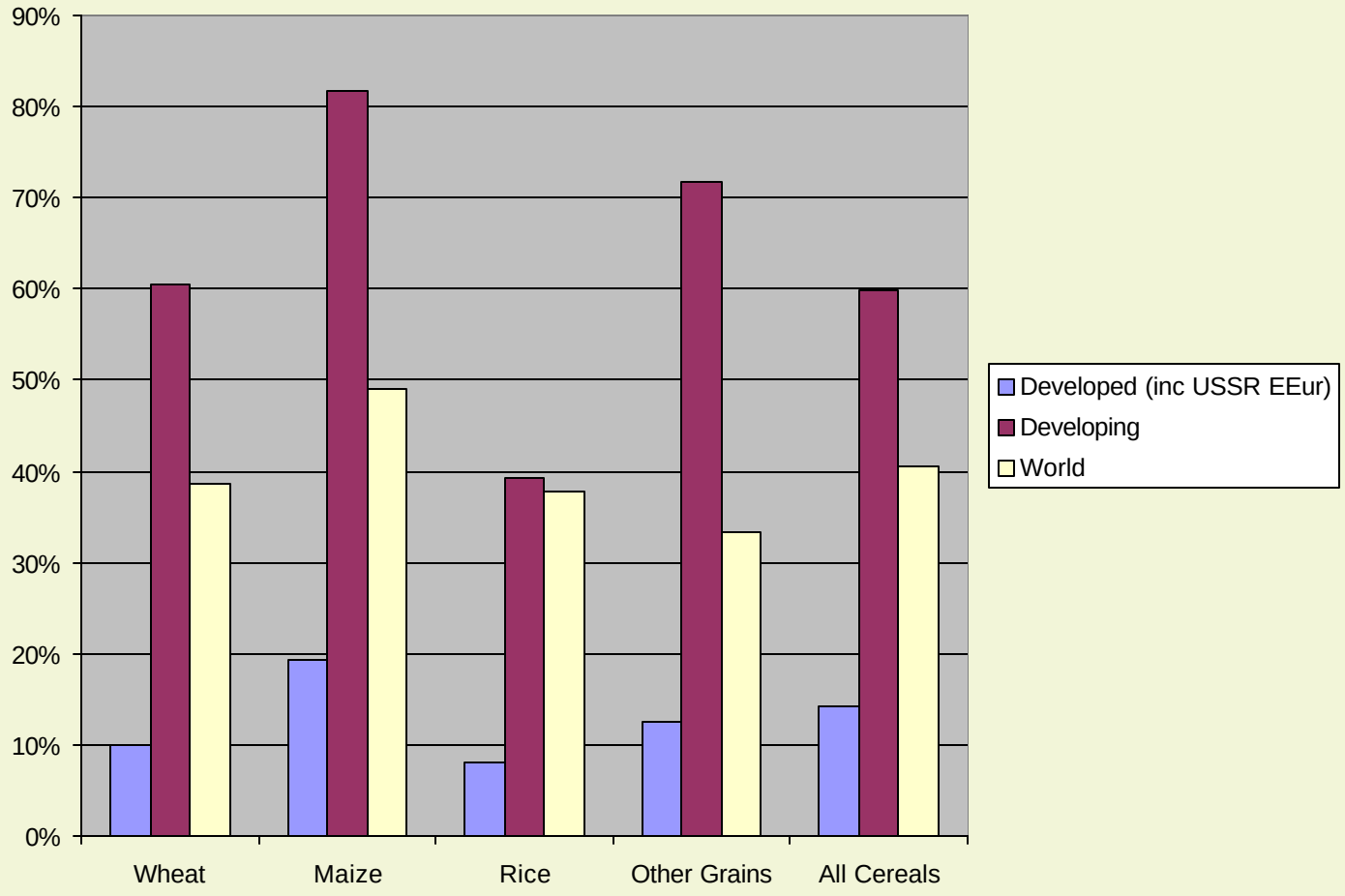


Cereal Demand, 1995 to 2020



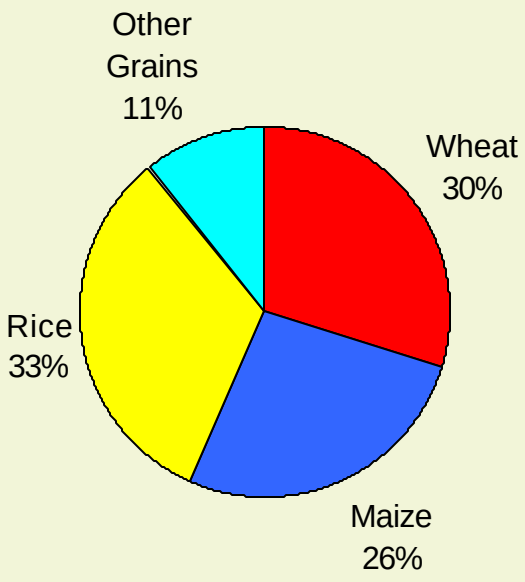
- **Global cereal demand will increase 39% (690.1 mmt) from a base demand of 1776.2 mmt in 1995.**
- **Demand in developing world will increase 54% (583.3 mmt).**
- **Demand in developed world will increase 15% (106.8 mmt).**

Demand Increase for Major Cereals, 1995 to 2020

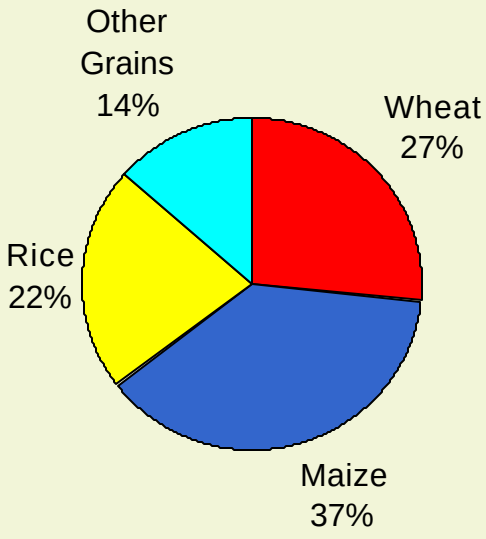


Crop Share of 1995 Demand and Demand Increase in Developing Countries

Crop Share of 1995 Cereal Demand



Crop Share in 1995 to 2020 Cereal Demand Increase



Cereal Demand, 1995 to 2020

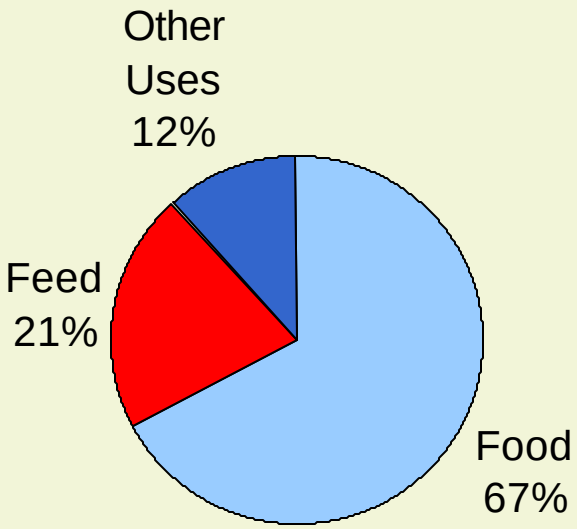
- **Maize will lead all cereals with a worldwide increase of 50% (278.6 mmt), followed by other grains at 36% (105.8 mmt), rice at 34% (126.5 mmt), and wheat at 32% (179.1 mmt).**
- **Maize, which accounted for 26% of cereal demand in 1995, will account for 37% of the cereal demand increase between 1995 and 2020.**

Cereal Demand, 1995 to 2020

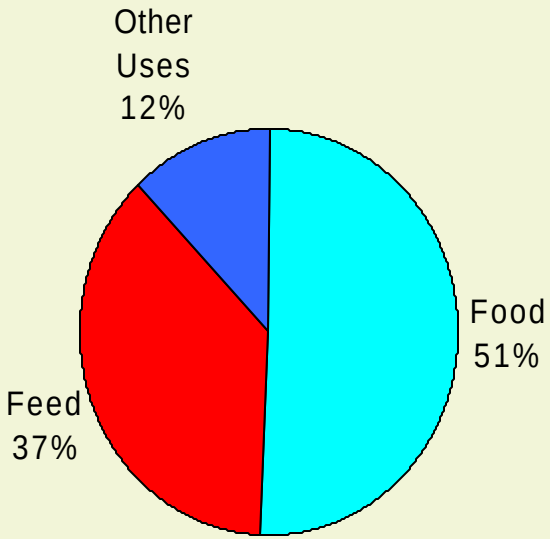
- **The developing countries, due mainly to higher population growth than the developed world and growing demand for cereals as feed, will drive overall cereal demand growth.**
- **Due to its importance as a feed grain, maize will experience the greatest demand increases.**

Cereal Demand Breakdown, 1995 and Future Growth

Breakdown of 1995 Developing Country Cereal Demand



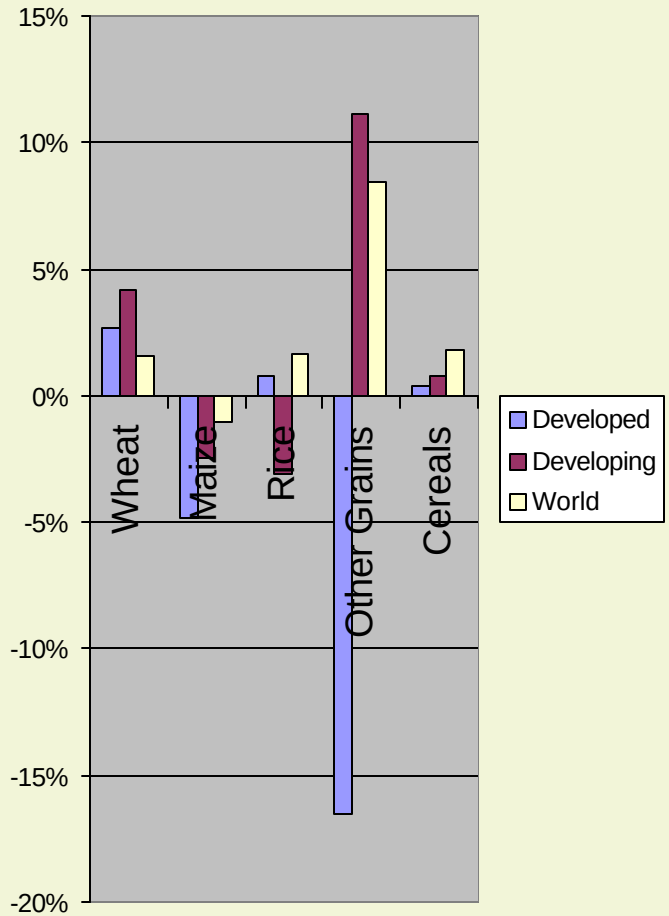
Breakdown of 1995 to 2020 Cereal Demand Increase



Cereal Food Demand, 1995 to 2020

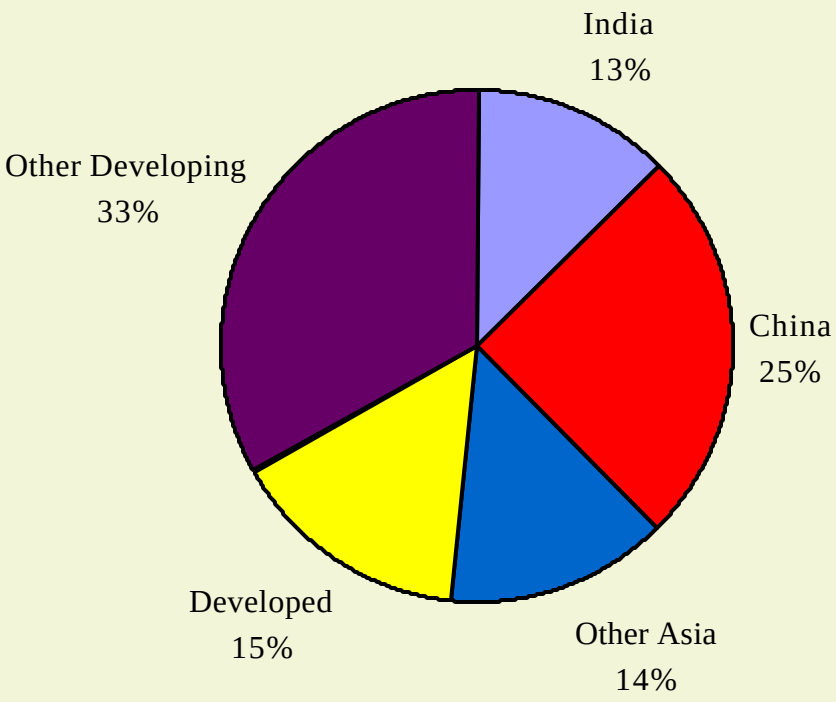
- **Aggregate food demand growth will slow somewhat from historical trends, mainly due to the slowing of population growth rates, particularly in developing countries.**
- **Rapid incomes and urbanization in Asia will drive declining worldwide per capita food consumption of maize as consumers shift to wheat and rice.**
- **A secondary consumption shift from rice to wheat will also occur in wealthier developing countries.**

Per Capita Cereal Food Demand, 1995 to 2020



- **Per capita cereal food demand will increase 2% worldwide, with demand for other grains increasing 8%, rice and wheat increasing 2%, and maize declining 1%.**
- **Other grain demand will decline 17% in the developed world, but will increase 11% in the developing world.**

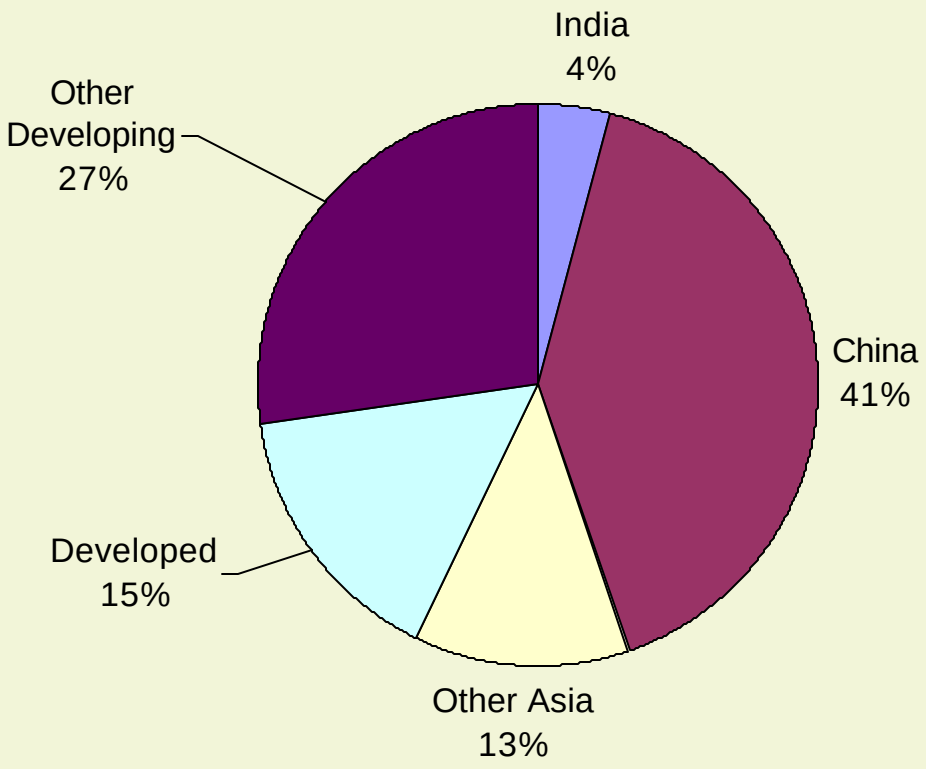
Regional Share Cereal Demand Increases, 1995-2020



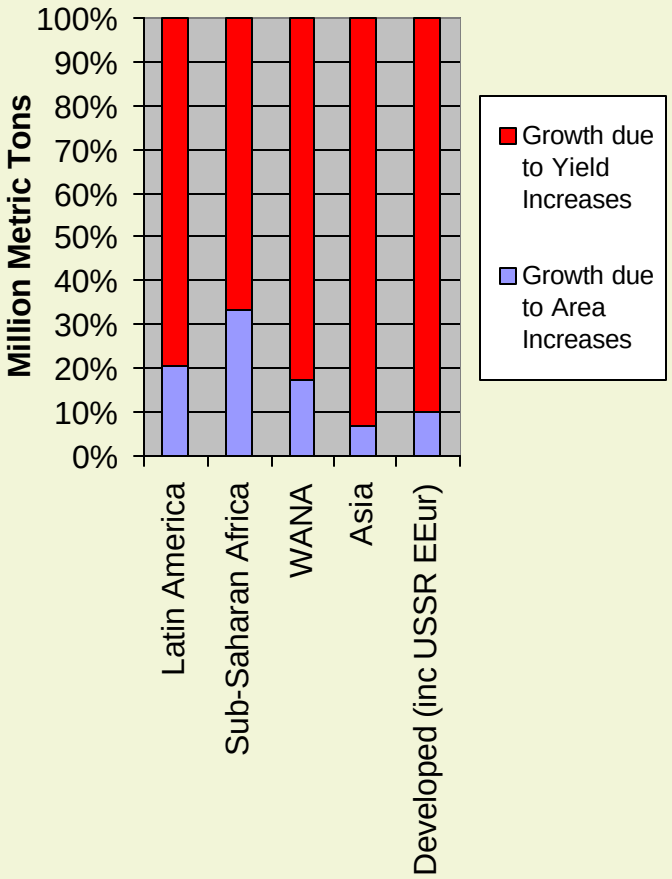
Cereal Demand Breakdown, 1995 to 2020

- **Due to rising meat demand in the developing world, cereal feed demand will increase more rapidly than food demand.**
- **In 1995, cereal feed demand accounted for 21% of total cereal demand. Yet cereal feed demand will account 37% of the total increase in cereal demand between 1995 and 2020.**

Regional Share of Meat Demand Increase, 1995 to 2020

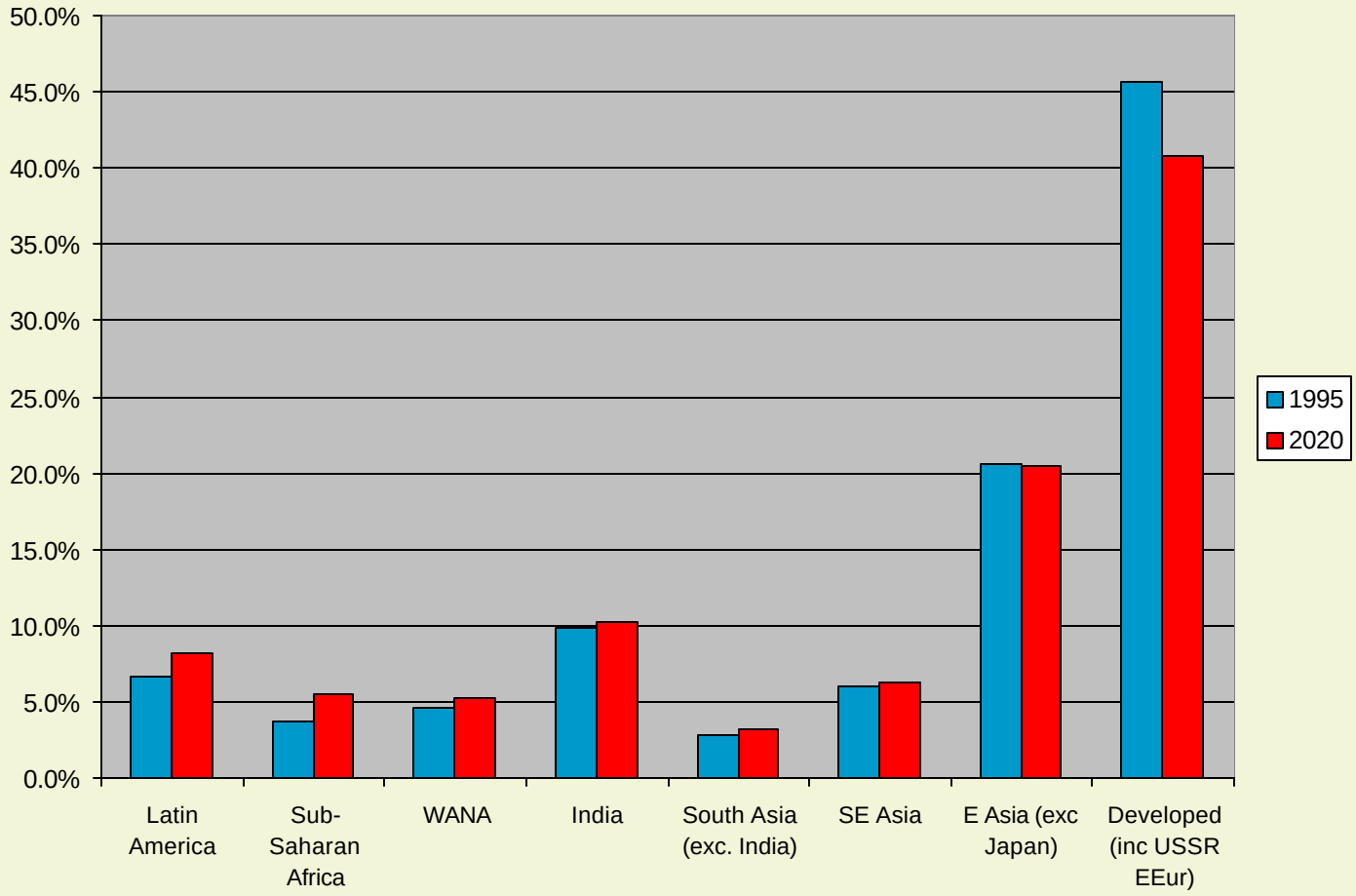


Cereal Production Growth Breakdown, 1995 to 2020

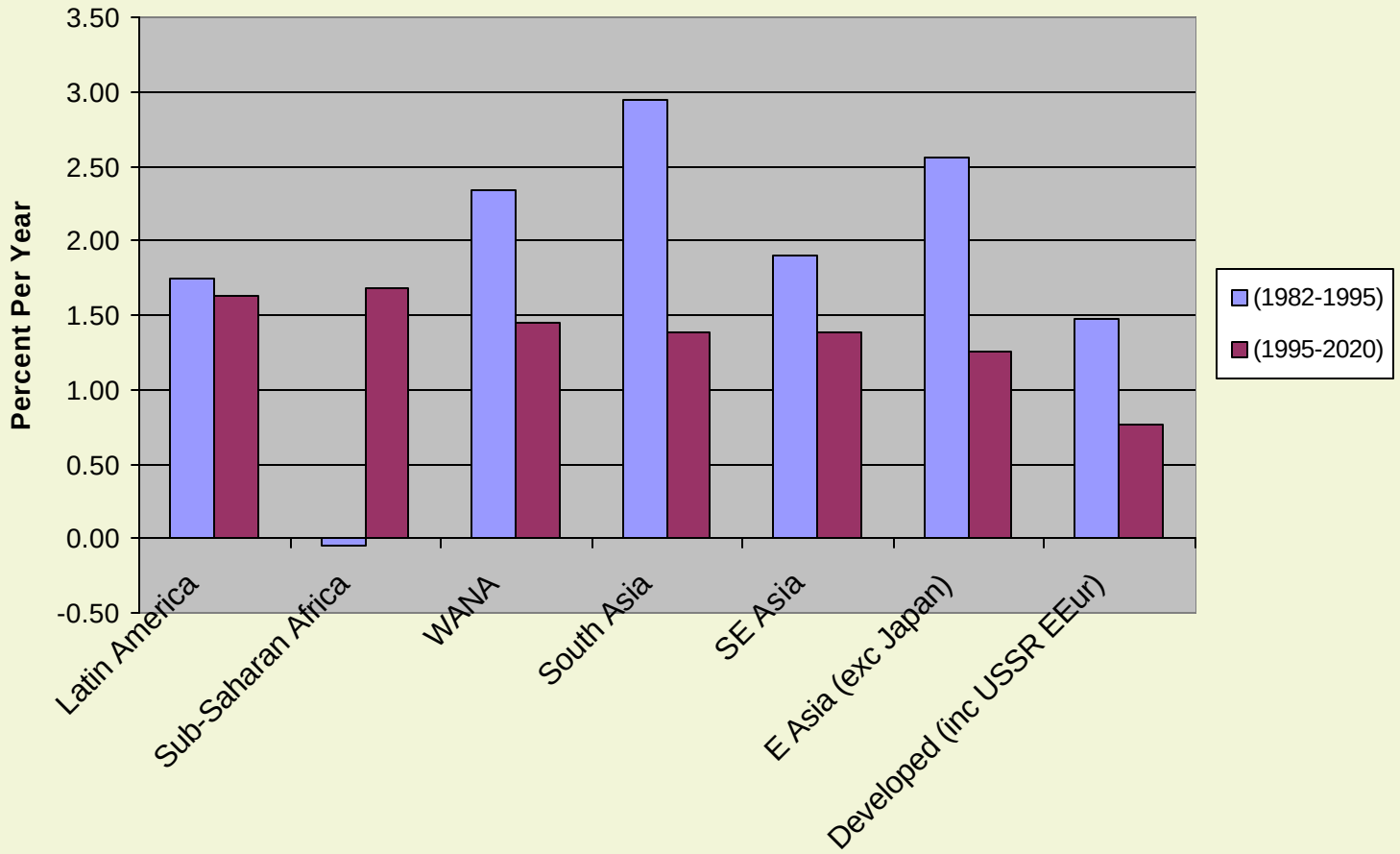


- **Yield growth will drive production increases worldwide between 1995 and 2020.**
- **Africa will be the only continent in which area increases contribute to more than 30% of total production increases.**

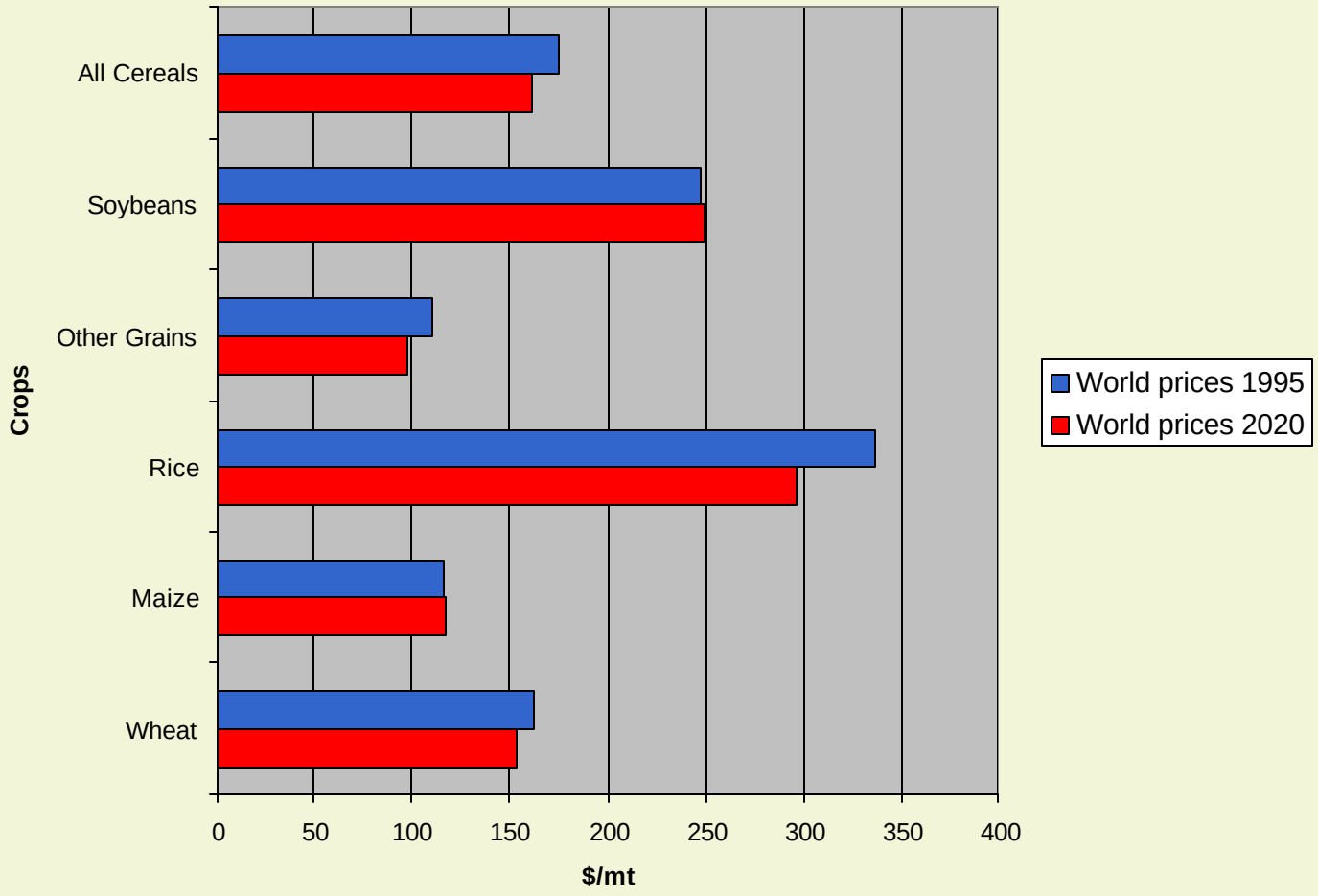
Regional Cereal Production Breakdown, 1995 and 2020



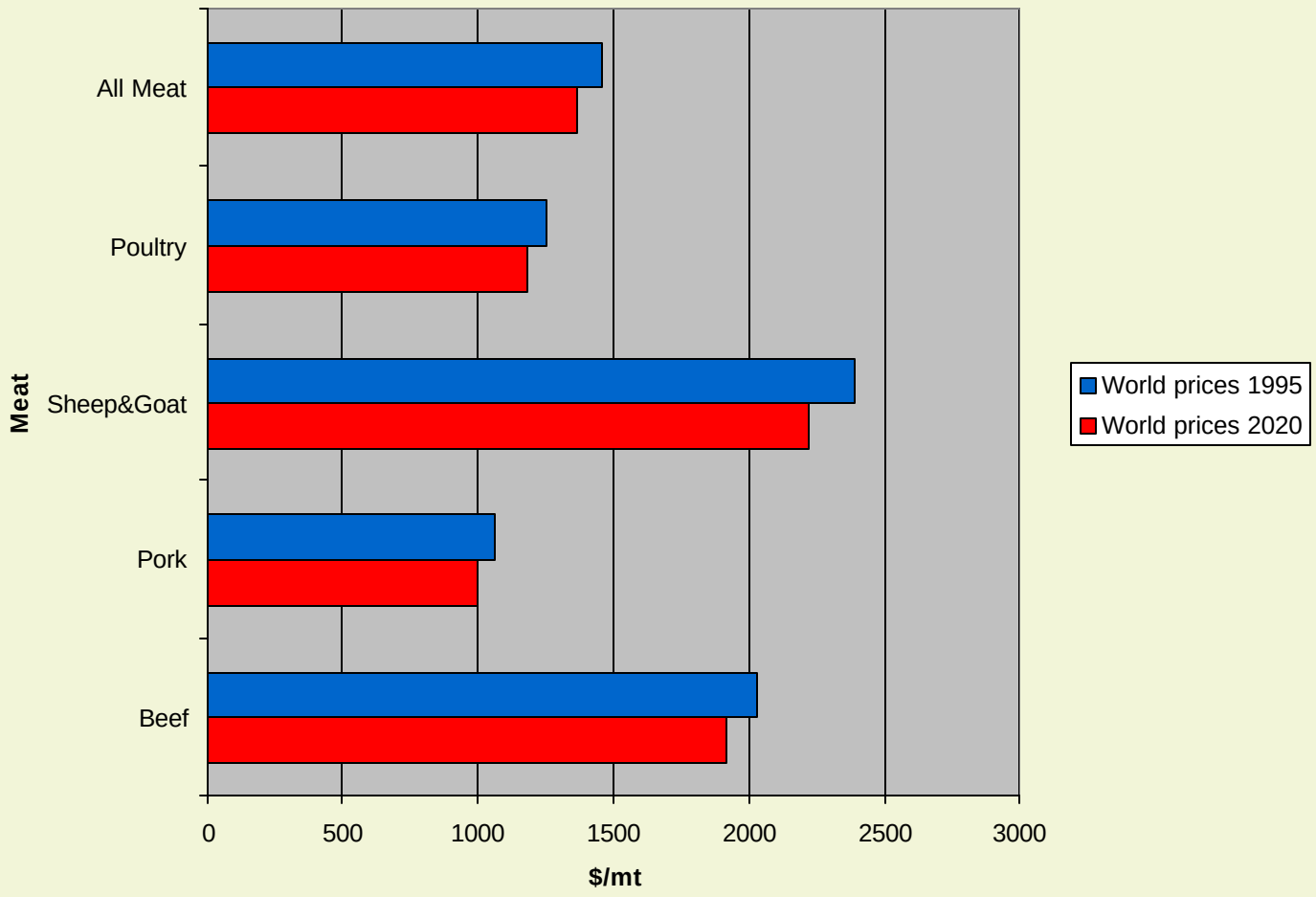
Cereal Yield Growth Rates, Historical and Projected



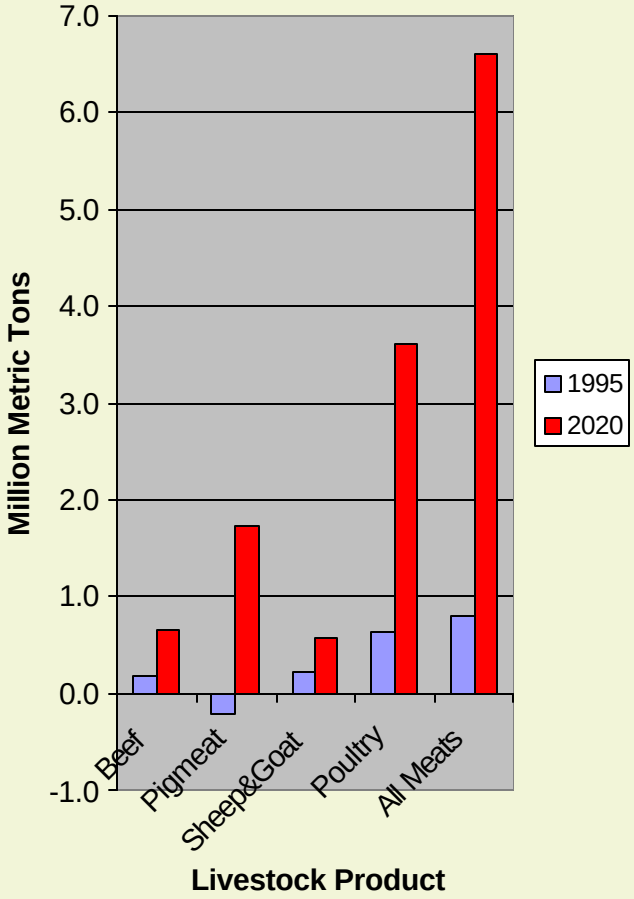
Cereal Prices, 1995 and 2020



Meat Prices, 1995 and 2020

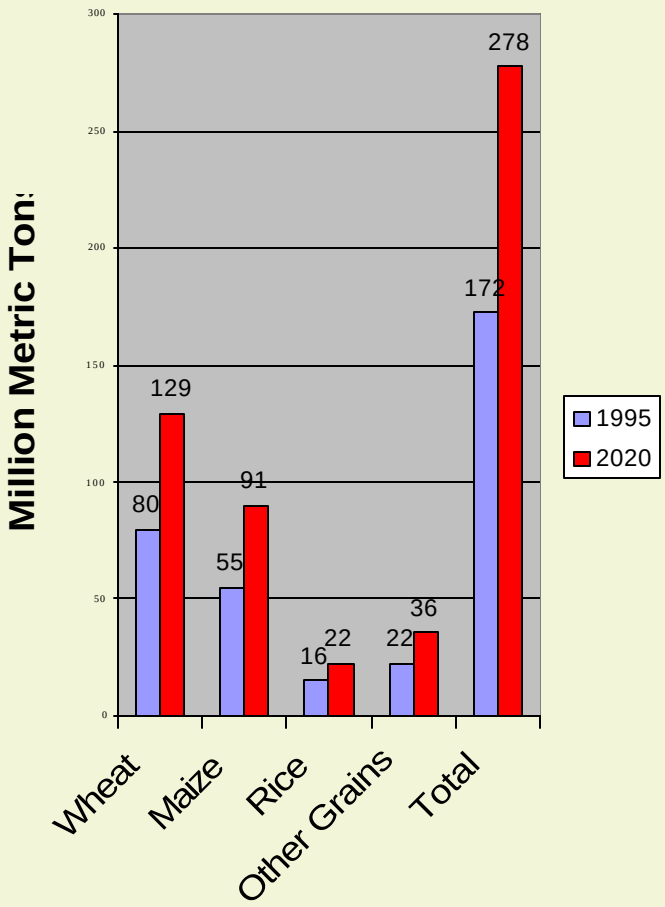


Net Livestock Exports from Developed to Developing Countries



- **Rising meat demand in the developing world will be met by substantial increases in meat imports from developed world producers.**
- **Developing world meat imports will increase from 0.8 mmt to 6.6 mmt.**

Worldwide Cereal Trade, 1995 and 2020



- **Net cereal imports into the developing world from the developed world will expand rapidly.**
- **Asia will account for 70% of the increase in cereal imports, and China alone will account for 54% of the Asian total.**

Regional Production Breakdown, 1995 and 2020

- **Worldwide cereal production will increase 690.1 mmt between 1995 and 2020.**
- **Regional shares of worldwide production will increase slightly or remain constant in all developing countries. The developed world's share of worldwide cereal production will decline from 45.7% to 40.8%.**