



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

1

Medium-term prospects for agricultural commodities

PROJECTIONS TO THE YEAR 2010

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ACRONYMS AND ABBREVIATIONS

ACP	African, Caribbean and Pacific States
BSE	bovine spongiform encephalopathy
CAP	Common Agricultural Policy (CAP)
CEEC	Central Eastern European Countries
CIS	Commonwealth of Independent States
EBA	Everything-But-Arms
EC	European Community
FAPRI	Food and Agricultural Policy Research Institute
GDP	gross domestic product
GMO	genetically modified organisms
GNP	gross national product
HIV/AIDS	human immunodeficiency virus/acquired immunodeficiency syndrome
ICO	International Coffee Organization
IMF	International Monetary Fund
ISA	International Sugar Organisation
LAC	Latin American and the Caribbean
LDC	least developed countries
LIFDCs	low-income food-deficit countries
MBM	meat-and-bone meal
MUV	manufactured unit value
NAFTA	North American Free Trade Agreement
NFIDCs	net food-importing developing countries
NFC	not-from-concentrate
OECD	Organization for Economic Co-operation and Development
SIDA	Swedish International Development Agency
SPS	Sanitary and Phytosanitary
SUAs	supply/utilization accounts
TRQ	Tariff Rate Quotas
UNDP	United Nations Development Programme
URA	Uruguay Round Agreement
URAA	Uruguay Round Agreement on Agriculture
USDA	United States Department of Agriculture
WTO	World Trade Organization

FOREWORD

FAO regularly undertakes projections of production, demand and trade for all major agricultural commodities and for practically all countries in the world, as a basis for medium-term commodity policy analysis and for assessing future food security problems.

These projections are important input for FAO's commodity outlook work in general, for global perspective studies such as World Agriculture: Towards 2015/2030 and as background for policy consultations on individual commodities. Outside FAO, the projections are used by national planning agencies, international research institutions, project missions and other organizations and enterprises requiring a world frame of reference for national agricultural commodity policy and investment strategies. The unique feature of FAO projections is to provide details of production, consumption and trade for individual commodities and countries that are generally not available elsewhere.

This report includes a basic set of commodity projections representing a "central" or "baseline" scenario. The central scenario is based on assumptions regarding the economic conditions and demographic trends expected to prevail during the period to 2010, a continuation of past trends in the speed of development in technology, no change in agricultural policies with respect to those presently known and normal weather conditions. Alternative scenarios of low and high production of selected basic foodstuffs in OECD countries and low-income food-deficit countries, respectively, are also investigated.

It should be noted that the report presents projections, not forecasts. The projections indicate what could happen at the end of the current decade under a specific set of macroeconomic, demographic and individual commodity assumptions and circumstances, all of which are subject to uncertainty.

Part I presents an overview of the projections results and of the main issues and areas of international policy concern arising from the assessment of the global agricultural commodity outlook to 2010, particularly in the area of trade, food security and nutritional problems of developing countries, especially the low-income food-deficit countries.

Part II summarizes the projections and discusses the main policy issues. Projections are presented for basic food and feed crops, livestock products, tropical beverages, selected fruit and agricultural raw materials by country and region.

Annex 1 contains a summary of the methodology approach used and of the main demographic and macro-economic assumptions. Annex 2 contains a description of the FAO World Food Model and of its specifications. Annex 3 includes a number of bibliographical references.

The present document is the first of a new series, entitled "FAO Commodities and Trade Technical Papers", that will include a variety of studies with a technical and analytical focus, prepared by the FAO Commodities and Trade Division.

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Director
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PART I - OVERVIEW OF MAIN FINDINGS, INCLUDING TRADE AND FOOD SECURITY ISSUES

1. Highlights

- Growth in global production of and demand for the main agricultural commodities is projected to grow on average by about 1.6 percent annually or 0.3 percent on a per capita basis during the period to 2010. This is a decline in aggregate and per capita growth from that experienced during the 1990s. Factors responsible for the slowing of world demand include reduced population growth, high current consumption and often saturated markets in the developed countries and, for some agricultural raw materials, increasing competition by synthetics.
- In the developing countries, aggregate production and consumption of the main agricultural commodities are projected to grow at 2.0 percent a year, considerably less than the 3.2 percent of the 1990s. In per capita terms, production and consumption are still expected to grow on average at 0.4 percent annually due to the projected slowdown in population growth.
- The growth of world trade in agricultural commodities, which was so robust in the 1990s, is expected to moderate in the projection period despite the beneficial effects of policy reforms. The slowdown in the present projections is due to the sharp falls in growth foreseen for fats, oils, oilmeals, meat, fruit, tropical beverages and most agricultural raw materials. However, the slowdown in market growth for the major agricultural products covered could be offset to some extent by other growth sectors not included in the study, particularly in the processed food products sector.
- The projections point to a deterioration in the net agricultural trade position of the developing countries. Though export volumes are projected to rise, and real earnings could also rise, population growth and the associated requirement for imports of food will absorb all or part of the increase.
- Of particular concern is the increase foreseen at constant prices in the net food imports of the low-income food-deficit countries (LIFDCs), a matter that lends urgency to incentives to boost their food production capacity. The situation of the Marrakesh Decision groups of least developed and net food-importing developing countries is similar.
- The long term trend decline in real prices, which show prices of all agricultural commodities declining relative to those of other major economic sectors over the 1970 to 2002 period, has averaged about 2 percent per year. Over the projection period, world market prices in real terms, that have recently been below longer term trend levels, are expected to return toward their trend levels.
- Further agricultural policy reforms would help to boost global agricultural markets. Farm support in industrialized areas remains high while multilateral negotiations are still at an early stage under the Doha Development Agenda in the WTO.
- Though the “baseline” projections suggest that most markets will be in fairly close balance by 2010, they are likely to be subject to instability. Crop failures both global and regional levels are an ever present threat and the cushion provided by stocks for most commodities will tend to diminish for most commodities.
- A low production scenario of selected basic foodstuffs in OECD countries indicates that assumed shortfall will not be fully compensated by an equivalent increase in production in the developing countries. Higher prices would lead to lower consumption and less imports.

Overview of main findings, trade and food security issues

- An alternative high production scenario of such commodities in the low-income food-deficit countries (LIFDCs) indicates that the augmented production would not contribute to a substantial improvement of the food situation in these countries. In fact, food and feed consumption would increase only marginally with respect to what projected in the baseline. However, their net food imports would be somewhat reduced.
- In cereal markets, stocks relative to utilization are projected to remain below their previous longer term averages, especially given policy reforms in many countries. This may also mean that the risk of an upward price movement over a shorter term period may become more frequent than in the past.
- The future prospects for countries that are the most food insecure are not likely to improve substantially in comparison to current trends in their calorie intake. While market prices may be favourable to enhancing consumption, other factors may have a negative impact on their food security. These include the continued intense competition for most bulk commodities that play an important role in generating export revenues and agricultural and rural incomes, a decrease in per capita domestic food production and slow to modest national economic growth. Together these factors would likely mean slow progress in reducing under-nourishment in these countries. Even a more rapid economic growth would not significantly address their hunger problem in the short to medium term.

2. An overview of the medium-term outlook: baseline and alternative scenarios

This section provides a summary of the main findings with regard to the baseline projections to 2010 and two alternative scenarios concerning the production of basic food products in OECD countries and LIFDCs. It begins with a review of key assumptions underlying the baseline scenario as well as of fundamental market trends and recent policy developments.

Population and income assumptions

Global demand for many commodities is crucially linked to economic and population growth and, especially in developing countries, to population shifts from rural to urban areas. Commodity projections to 2010 are based on the United Nations' medium variant, which estimates that world's population will expand by 1.3 percent annually over the period from 1998–2000 to 2010, down from the 1.5 percent per year recorded in the previous decade. In developing economies, population growth is anticipated to slow to 1.6 percent annually; in the developed countries to 0.3 percent, and in transition economies to 0.04 percent. About 97 percent of the growth in world population originates in developing countries (Table 1.1).

World gross domestic product (GDP) assumptions are based on the projections of the World Bank and IMF. Total world GDP is estimated to increase by 2.9 percent per year, a modest acceleration compared with 2.4 percent of the previous decade. World per capita GDP is expected to increase by 1.7 percent annually, compared with 0.9 percent of the previous decade. The estimated improvement in world GDP is largely based on the continuing recovery projected for the economies in transition, which may grow at 4.5 percent per year. In the developing countries, total GDP is assumed to rise by 4.6 percent annually or by 3.0 percent in per capita terms.

Historical trends and policy perspectives

The analysis of historical trends reveals that the productivity growth in global agriculture has so far been sufficient to meet effective demand. Over the past three decades, world agriculture production has grown faster than population. Increased productivity stemming from the use of new technologies in many industrialized countries has been in part responsible for the long-term decline in real commodity prices. In practice, world agriculture has been operating in an environment where effective demand has been constrained by a number of factors. The rapid growth of agriculture has co-existed with hundreds of millions of world population not having enough food to eat.

Limits on the demand side at the global level reflected three main factors: i) the slowdown in population growth from the early 1960s onwards; ii) the saturation in the levels of per capita food consumption for a growing share of world population and iii) the difficulty in improving consumption by those who were too poor to purchase it or did not have enough resources to produce it themselves.

The first two factors will continue to dominate in the future. Their impact will be reflected in lower growth of demand than in the past and, indirectly, also of production. The third factor will also continue to play a major role, given that the overall economic outlook indicates that low incomes and poverty will remain widespread in the future. It follows that for a rather large part of the world population potential demand would not automatically translate into effective demand (see also section 3 below). Thus, the slowdown observed in the past trends of world demand is likely to persist and perhaps even to accelerate in the future.

On the production side, there is no certainty that the past experience of rapid productivity growth and extended utilization of land will continue. In terms of the natural resources that are required for food and agriculture production, there are already indications of losses of farmland, limits to freshwater supplies, erosion and degradation of soils, and declining genetic diversity. For agriculture, there are biological limits to yields, diminishing returns, and associated problems from the intensive use of fertilizers and pesticides. As hazards, there are new plant and animal diseases, increased ultraviolet radiation, air pollution, climate change, and sea-level rise. There are also socioeconomic constraints of inadequate markets, infra-structure and research investment, and limited access by poor farmers to land, capital, and technology.

As alternatives to these specific biophysical and socioeconomic limitations, there are at least four major opportunities for increasing the food supply: i) the unrealized potential to increase yields from the application of current techniques and technologies; ii) the possibilities provided by the biotechnological revolution that is now underway; iii) the development of organic and sustainable agriculture techniques which could rehabilitate degraded lands with consequent productivity

gains; and iv) the opportunity to reduce food losses and to increase efficiency in the preparation and use of food.

Doubling or trebling global food production is within the range of the possible. But to do so, many changes and improvements are need in farmers' fields, in research institutions, in agricultural markets, and in the households that consume the food produced.

Further, fundamental agricultural policy reforms would help to sustain a recovery in global agricultural markets. Farm support in industrialized areas remains high while multilateral negotiations are still at an early stage under the Doha Development Agenda in the WTO.

In the following section a brief overview is given of the expected increase in aggregate volume production, demand and trade of the agricultural commodities covered in the study. The figures are obtained by multiplying physical quantities of production, demand and trade times price for each commodity and summing up over all commodities (each commodity is valued at the same average international prices in all countries and in all years).

More details on the outlook for individual commodities and countries, including related policy issues, are presented in Part II.

The baseline projection: Growth in agricultural production and demand, and main trade issues

At the world level, aggregate production of agricultural commodities is projected to grow on average by about 1.6 percent annually or 0.3 percent on a per capita basis during the period to 2010 (Table 1.2). This is a decline in aggregate and per capita growth from that experienced during the 1990s. In any case, aggregate agricultural production is projected to grow, on average, less than the economy at large. Nevertheless, this is likely to maintain on-going pressure on resources in agriculture and on demands for increased government assistance, which if not supplied may cause declines in income and living standards in rural communities. The commodities likely to grow most rapidly are those more responsive to income changes including oilcrops, meat

Overview of main findings, trade and food security issues

(poultry), sugar and certain tropical beverages. Cereals and especially agricultural raw materials are projected to grow least (Chart 1).

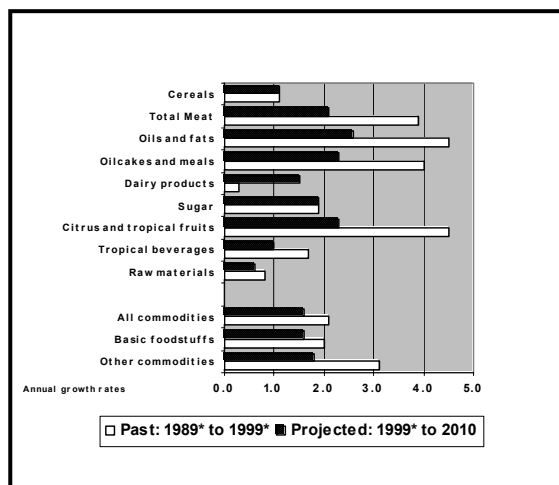


Chart 1. Growth of world agricultural production by selected commodity groups

Agriculture in developing countries is projected to grow most strongly with aggregate growth at 2 percent annually, which is considerably less than that the 3.2 percent of the 1990s, as rapid growth rates in oilcrops, meat and fruits return to more modest levels (Table 1.3 and Chart 2). In the industrialized countries, demand growth is slow, and consumer concerns are rising, not just for safety and quality, but also for production processes (Table 1.5). Development of “quality/tracking systems” is an increasingly predominant feature of agriculture and food economies worldwide, often driven by large retail chains that reach across borders. While common concerns may integrate across developed country markets, segmentation of markets will continue given differing capacities of countries to meet corresponding compliance costs. At the same time, the shares of markets continue to shift to developing countries, with potential for accommodating greater regional trade within different market segments. While uncertainty over how genetically modified organisms will impact markets will persist, the primary impact will concern those commodities currently affected, mainly soybeans, maize and cotton, until wider consumer concerns are addressed.

The major economic change in the projection period is the turnaround in transition economies which has been underway in the past few years, and is expected to continue (Table 1.4).

Growth in world trade, which was so robust in the 1990s, is projected to moderate in the projection period, particularly for oilseeds and meats. Annual growth in total exports (volume basis) is projected to fall to 2.1 percent from 2.9 percent in the 1990s. There are several reasons for the decline in the growth of trade, one of which is simply that high growth for certain commodities started from a low base. Another one is trade reform, especially through regional agreements and through WTO, which contributed to growth in the 1990s. Without further reform, aggregate trade growth can be expected to slow as market access continues to be highly restricted, particularly for certain commodities, such as sugar, and dairy products. However, even without further trade reform, low cost suppliers continue to increase trade shares for most commodities. Preference arrangements, either in the form of regional trade agreements, or new trade preferences may help generate trade diversion and some trade growth, particularly in further processing of value-added products.

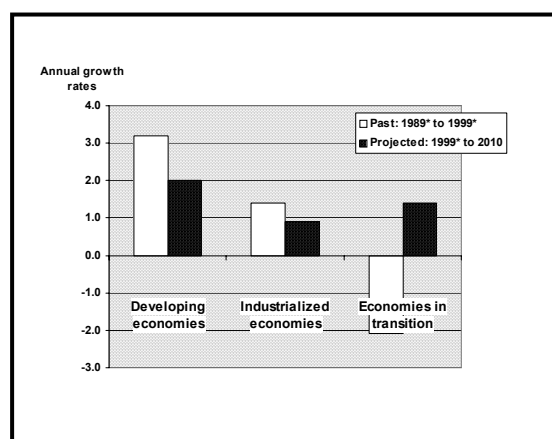


Chart 2. Past and projected growth of agricultural production by economic areas

Factors in the projected increase of world demand include the relatively strong economic growth still expected in the developing countries and the recovery in the demand projected for some of the economies in transition.

The developing countries will account for much of the growth in overall commodity demand because of their comparatively buoyant per capita GDP expansion and the greater responsiveness of demand to income growth (Chart 3). By contrast a slow growth in demand is foreseen for the developed countries, because high current per capita

consumption and slow growth of population are expected to limit the demand growth rate for many commodities. Aggregate demand of basic foodstuffs in the developing countries is projected to grow by 2.0 percent annually over the period 1999*–2010¹, i.e. slower than the 3.2 percent annual rate during the previous decade but still allowing for increases in per capita consumption. By contrast, the developed countries are projected to raise their demand of basic foodstuffs by 0.9 percent annually and the economies in transition by 1.3 percent annually. The aggregate imports, however, of developing countries for the commodities covered in the projections are expected to rise by 2.4 percent annually over the period 1999*–2010, thus increasing their share of world agricultural imports.

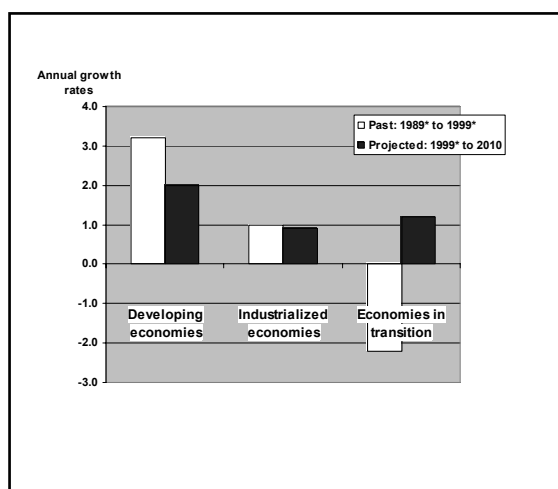


Chart 3. Past and projected growth of demand for agricultural products by economic areas

The net imports of low-income food-deficit countries for basic foodstuffs (cereals, livestock products, oilseeds and oils) are projected to increase from about US\$21 billion in 1999* to about US\$33 billion in 2010 (at constant 1998–2000 average prices).² A similar situation is projected for least developed countries (LDCs) and for net food-importing developing countries (NFIDCs). This pattern not only reflects growth in demand in these regions relative to the capacity domestically to meet that demand, but also the growth in excess supply from other regions.

¹ Throughout this report, a year marked with an asterisk (*) signifies the average of the three years centred on the year shown.

² Prices are world export unit values.

World market prices in real terms have recently been all below their longer term trend levels (Charts 4 to 6). They are expected to return toward their trend levels over the projection period. The long term trend decline in real prices, which shows prices of all agricultural commodities declining relative to those of other major economic sectors over the 1970 to 2002 period, has averaged about 2 percent per year. Such a trend decline has reflected relatively greater productivity growth in agriculture.

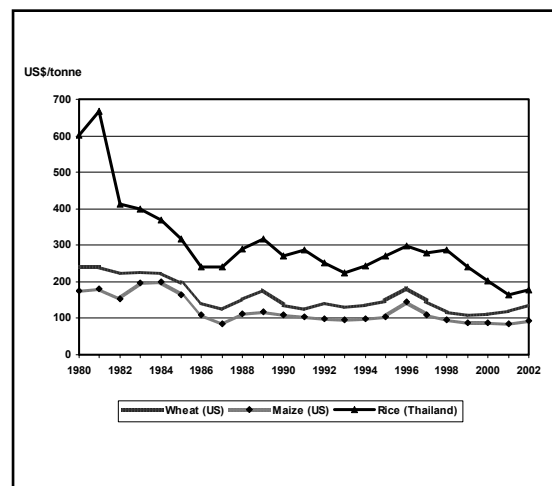


Chart 4. Cereals: world market prices, 1980 to 2002 (constant 1990 US\$)

With indicators in this projection showing a slowing of productivity growth, without a major shift in technology, the projection results indicate a decline slower than that implied by the trend over the 1970–2002 period. Some commodity prices are currently moving higher; this development should be viewed in response to short term factors which may not persist in the longer term. Despite low real prices, opportunities do exist for producers and countries that are able to be at the forefront of technology/cost reduction or exchange rate driven change. They will gain market share. The agricultural turnaround in transition countries may impact on markets, both as exporters and importers.

In cereal markets, stocks relative to utilization are projected to remain below their previous longer term averages, especially given policy reforms in many countries. This may also mean that the risk of an upward price movement over a short term period is more likely than a further fall in prices. However, given the ability of world supply to respond in a context of slow demand growth, such price strength would likely be short lived.

Overview of main findings, trade and food security issues

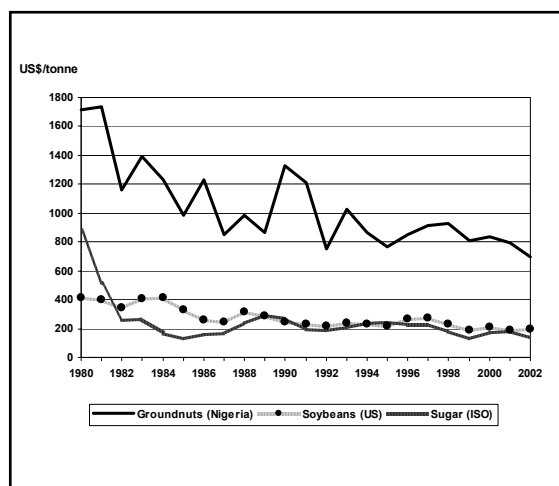


Chart 5. Oilseeds and sugar: world market prices, 1980 to 2002 (constant 1990 US\$)

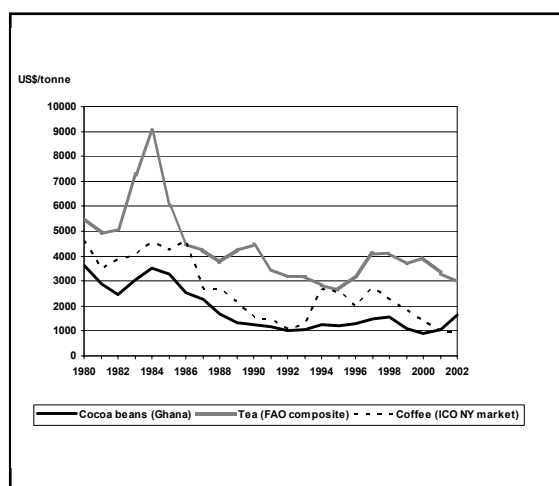


Chart 6. Tropical beverages: World market prices, 1980 to 2002 (constant 1990 US\$)

Alternative scenarios for basic food products

Two alternative scenarios to the baseline scenario for basic food products are explored in this section. These are: a low production scenario of basic foodstuffs by OECD countries and a high production scenario by LIFDCs.

Low production scenario in the OECD countries

The “baseline” projections indicate that, as world population expands by about 900 million inhabitants in the current decade, food consumption will increase by almost 20 percent worldwide and by one-fourth in the developing countries. To match this increase world output of basic foodstuffs will have to grow by 1.6 percent per year. This will add

considerable pressure on natural resources: Farmers have two options: to intensify production on areas already in use or to expand cultivation into new areas.

In the past decade, all of the increase in world cereal production was due to increases in yields while area has actually declined by 27.9 million hectares or 4 percent. In the developed countries, yield increase has been even greater. In these countries cereal production has increased by 108 million tonnes while area was reduced by 11.7 million hectares or 8 percent: But intensification can also produce problems. Rising yields by increasing the use of chemicals, diverting more water for irrigation and intensifying cropping also with the use of genetically modified seeds can create problems for the environment. Runoff of fertilizers and animal wastes can cause algal blooms and the eutrophication of lakes and enclosed seas. Although these problems are more common in Western Europe and North America, pollution from agricultural activities is becoming significant in Eastern Europe and in certain areas of the developing world.

To simulate the impact of environmental concerns on food output, a low production scenario was considered for the current decade. This scenario assumes a reduction of 5 percent in the area projected for wheat, rice, coarse grains and soybean under the “baseline” scenario in the OECD countries with the exception of Australia and New Zealand. The reduction could either derive from unilateral changes in national set-aside programmes or result from changes in crop support policies associated with the outcome of the WTO trade negotiations on agriculture.

World cereal production would fall by 18.7 million tonnes below the level projected for the “baseline” scenario. The large drop in the cereal output of the OECD countries, i.e. about 28.1 million tonnes, will be partly offset by an increase of about 5.8 million tonnes in the cereal output of the developing countries. The compensation would be only 23 percent for maize and 30 percent for wheat, thus leaving large shortfalls at the global production levels. These low rates of replacement mainly reflect the relatively isolated domestic market behaviour of the developing countries in relation to changes in international market prices.

Overview of main findings, trade and food security issues

As a consequence of the 6 percent rise in international cereal prices, aggregate world consumption of cereals would drop by 16.5 million tonnes or by 0.8 percent below the level projected in the baseline scenario. In the developing countries consumption of wheat and maize would fall by 0.8 percent and 1.3 percent, respectively.

International trade in cereals under this scenario would decline by 6 million tonnes over the level of 280 million tonnes projected in the baseline scenario. Developing countries would reduce imports and expand exports with a consequent large decline in their net import position. Net import of wheat would decline by 7.8 percent with respect to the “baseline” scenario; that of maize would fall by 20 percent while net export of rice would increase by 70 percent.

The impact of this scenario on the projected production of soybean would be even larger in relative terms. The developed countries would reduce their output of soybean by 3.6 million tonnes or by 4 percent with respect to the level of 86 million tonnes projected in the baseline scenario. At the world level, the drop in the soybean output of the OECD countries would be marginally offset by an addition of 0.9 million tonnes in the output of the developing countries over the level projected by the year 2010.

High production scenario in the LIFDCs

A bumper crop scenario, almost a mirror image of the assumed low production scenario in the OECD countries, was run to assess the impact of increased cereal output on the food supply situation of the low-income food-deficit countries (LIFDCs) excluding India and China.

This scenario assumes a 5 percent increase in the cereal yields with respect to those projected in the baseline scenario, possibly associated with simultaneously favourable weather conditions and technological improvements in these countries.

The aggregate effect of the simulated shock is an increase of 12.4 million tonnes or 4.6 percent in the cereal production of the LIFDCs with respect to the level projected in the baseline. It should be noted that the increase is slightly smaller than the assumed rise in cereal yields due to the reduction in the area under

cereals associated with lower producer prices (Chart 7).

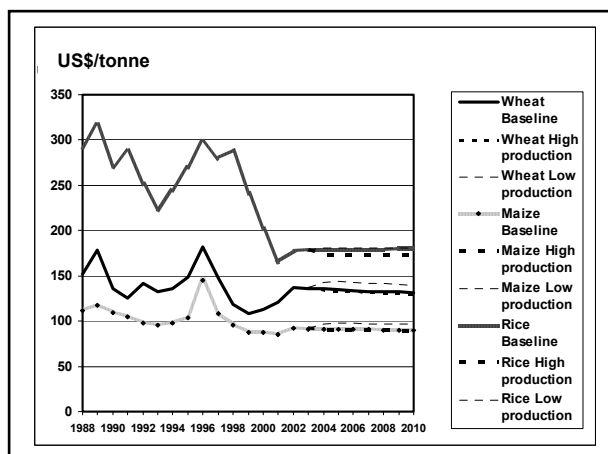


Chart 7. Cereals: world market prices, past and projections (constant 1990 US\$)

International trade in cereals would decline by 1.8 percent and the imports of the LIFDCs would fall by 8.7 percent.

Overall, the increase in cereal output would not contribute to a substantial improvement in the food supply situation in these countries. In fact, there would be only a 0.3 percent increase in food and feed cereal consumption. About 64 percent of the increase in cereal production would be allocated to domestic market and 28 percent to export which would expand by 62.6 percent compared to the level projected in the baseline. As a result, trade market prices of cereals are expected to decline by 1.8 percent.

With the reduction of imports and the increase of exports, the net import cereal bill of the LIFDCs would be US\$2.3 billion lower than that projected in the baseline, i.e. US\$14.7 billion evaluated at constant 1998/2000 prices.

Overview of main findings, trade and food security issues

Table 1.1. Assumptions on population and GDP growth, 1989 to 1999 actual and 2010 projected

	Population			Total GDP (billion US\$ at 1999 prices)			Per capita GDP (US\$ at 1999 prices)			
	1989	1999	2010	1989	1999	2010	1989	1999	2010	
World total	5 167	5 976	6 867	25 652	32 662	44 762	4 964	5 466	6 518	
	Growth rates (percent per year)									
	1989–99		1999–2010		1989–99		1999–2010		1989–99	
World	1.5		1.2		2.4		2.9		1.0	
Developing economies	1.7		1.4		4.5		4.6		2.7	
North Africa	2.0		1.7		2.6		3.2		0.6	
Sub-Saharan Africa	2.7		2.4		2.6		3.8		-0.1	
Central America	2.0		1.6		3.5		3.8		1.5	
Caribbean	1.2		1.0		1.7		3.9		0.5	
South America	1.6		1.3		2.7		2.8		1.0	
Near East	2.5		2.1		2.7		3.2		0.1	
South Asia	1.9		1.5		5.3		5.1		3.5	
South East Asia	1.2		0.9		6.8		6.0		5.5	
Oceania	2.1		2.0		3.1		4.3		0.8	
Transitional economies	0.1		0.0		-3.7		4.5		-3.8	
Eastern Europe	-0.1		-0.0		-1.1		4.4		-1.0	
CIS	0.2		0.1		-4.5		4.5		-4.5	
Baltic	-0.6		-0.7		-0.3		5.0		0.4	
Industrialized economies	0.6		0.3		2.3		2.4		1.6	

Table 1.2. World: Past and projected growth of production, demand and trade

	Production/demand		Net exports	
	1989*-1999*	1999*-2010	1989*-1999*	1999*-2010
	<i>percent per year</i>			
All commodities	2.1	1.6	2.9	2.1
Basic foodstuffs	2.0	1.6	1.9	2.4
Cereals	1.1	1.1	2.5	1.8
Wheat	0.8	1.3	1.5	2.0
Rice, milled	1.6	0.9	7.6	2.2
Coarse grains	0.9	1.1	1.9	1.2
Maize	2.9	1.2	2.3	1.3
Millet and sorghum	-0.2	1.3	-2.1	2.4
Other coarse grains	-2.4	0.6	2.3	0.7
Cassava	1.3	1.4	-6.7	2.5
Oils and fats	4.5	2.6	6.8	2.8
Oilcakes and meals	4.0	2.3	5.3	2.6
Total meat	3.9	2.1	6.1	2.8
Beef and veal	2.8	1.3	1.3	2.4
Mutton and lamb	3.2	2.0	1.0	2.7
Pigmeat	4.0	2.2	12.7	3.0
Poultry meat	6.2	3.1	16.2	3.1
Dairy products	0.3	1.5	2.6	2.3
Other commodities	3.1	1.8	4.0	1.9
Citrus and tropical fruits	4.5	2.3	5.0	2.3
Citrus fruits	3.7	1.4	4.4	-0.4
Tropical fruits	5.3	3.2	5.2	3.1
Tropical beverages	1.7	1.0	1.8	0.9
Tea	1.3	1.9	1.1	1.7
Coffee	1.9	0.5	1.8	0.2
Cocoa	1.7	2.0	2.7	2.1
Sugar	1.9	1.9		
Raw materials	0.8	0.6	0.7	0.2
Cotton	0.4	0.8	1.0	0.8
Jute	-2.2	-1.5	-3.0	-0.1
Abaca	1.6	0.4	1.2	0.4
Sisal	-3.7	-2.0	-2.5	-4.1
Coir	5.7	2.0	1.4	0.4
Bovine hides and skins	1.4	-0.1	-0.7	-3.5
Sheep and goat skins	1.2	1.4	1.5	-0.7
Natural rubber	2.9	1.3	1.6	1.3

*Throughout this document, a year marked with an asterisk signifies the average of the three years centred on the year shown.

Overview of main findings, trade and food security issues

Table 1.3. Developing economies: Past and projected growth of production, demand and trade

	Production		Demand		Net imports	
	1989*– 1999*	1999*– 2010	1989*– 1999*	1999*– 2010	1989*– 1999*	1999*–2010
All commodities	3.2	2.0	3.2	2.0	2.5 *	2.4 *
Basic foodstuffs	3.1	2.0	3.2	2.0	17.3	0.7
Cereals	1.9	1.1	1.9	1.2	0.4	2.7
Wheat	2.0	1.2	1.7	1.5	-0.5	3.2
Rice, milled	1.7	0.9	1.8	1.0	-8.1	- *
Coarse grains	2.1	1.3	2.3	1.3	2.8	2.5
Maize	3.2	1.3	3.3	1.4	2.4	3.3
Millet and sorghum	0.2	1.4	0.4	1.3	3.8	3.8
Other coarse grains	-1.0	1.4	0.2	1.0	3.4	0.6
Cassava	1.3	1.4	2.0	1.4	-8.7 *	4.2 *
Oils and fats	5.3	3.3	5.7	2.8	-	- *
Oilcakes and meals	4.5	3.2	6.7	3.0	-3.3 *	4.1 *
Total meat	5.5	2.8	5.4	2.8	3.0	2.6
Beef and veal	3.9	2.2	3.6	2.2	-6.8	1.6
Mutton and lamb	4.1	2.5	4.0	2.5	2.8	3.3
Pigmeat	5.7	2.7	5.8	2.8	38.8	3.7
Poultry meat	8.9	3.8	8.9	3.7	10.4	2.1
Dairy products	3.8	2.5	3.5	2.5	0.7	2.6
Other commodities	3.8	2.2	3.1	2.0	4.4 *	2.0 *
Citrus and tropical fruits	5.2	2.6	5.2	2.9	5.2 *	2.2 *
Citrus fruits	5.1	1.5	5.0	2.8	5.3 *	-1.2 *
Tropical fruits	5.3	3.2	12.3	3.4	5.1 *	3.1 *
Tropical beverages	1.8	1.0	1.4	1.6	1.8 *	0.9 *
Tea	1.8	1.9	2.0	1.8	1.2 *	2.3 *
Coffee	1.9	0.5	0.5	1.3	1.8 *	0.2 *
Cocoa	1.7	2.0	3.0	1.8	1.7 *	3.2 *
Sugar	3.2	2.5	2.9	2.9	5.5 *	-5.3 *
Raw materials	1.3	1.2	2.5	1.2	-	3.5
Cotton	0.6	1.2	2.2	1.0	12.7	1.2
Jute	-2.2	-1.5	-1.1	-1.6	-4.2 *	-4.4 *
Abaca	1.6	0.4	3.7	0.1	1.1 *	0.5 *
Sisal	-3.7	-1.9	-4.0	2.1	-3.5 *	-6.0 *
Coir	5.7	2.0	10.3	2.2	0.4 *	1.6 *
Bovine hides and skins	3.1	1.5	3.2	1.3	4.7	-0.7
Sheep and goat skins	3.3	1.8	4.0	2.4	2.3 *	-
Natural rubber	2.9	1.3	4.3	2.5	1.8 *	0.3 *

Note: a star (*) indicates net exports.

Overview of main findings, trade and food security issues

Table 1.4. Economies in transition: Past and projected growth of production, demand and trade

	Production		Demand		Net imports	
	1989*– 1999*	1999*– 2010	1989*– 1999*	1999*– 2010	1989*– 1999*	1999*– 2010
All commodities	-2.1	1.4	-2.2	1.2	-7.3	1.4
Basic foodstuffs	-2.0	1.5	-2.2	1.3	-11.1	-1.6
Cereals	-3.8	2.3	-4.3	1.1	- *	40.0
Wheat	-2.9	2.9	-3.7	1.3	- *	26.8
Rice, milled	-7.2	3.2	-3.4	4.1	3.1	4.8
Coarse grains	-4.6	1.4	-5.1	0.6	- *	14.3
Maize	-1.9	1.6	-4.9	0.7	- *	8.3
Millet and sorghum	-9.5	-0.4	-11.5	-0.3	- *	-
Other coarse grains	-5.4	1.3	-5.1	0.5	- *	19.6
Cassava			-41.4	38.0	-41.6	38.4
Oils and fats	-1.0	2.3	-1.9	2.6	- *	-
Oilcakes and meals	-2.8	1.8	-7.0	2.8	-14.3	5.7
Total meat	9.1	1.4	10.7	1.7	-	4.0
Beef and veal	16.2	0.2	16.6	0.7	24.5	6.1
Mutton and lamb	12.9	1.8	13.7	1.8	-	-0.3
Pigmeat	5.5	2.0	6.6	2.1	-	3.3
Poultry meat	7.7	2.6	13.8	2.8	-	3.1
Dairy products	-4.8	0.8	-4.9	0.9	- *	-12.5
Other commodities	-4.4	-1.8	-2.4	0.5	2.7	4.1
Citrus and tropical fruits	-9.9	-0.4	7.6	2.0	9.6	2.1
Citrus fruits	-9.9	-0.4	3.8	2.5	6.0	2.7
Tropical fruits			16.9	1.4	16.9	1.4
Tropical beverages	-18.7	2.0	-0.4	2.9	0.8	2.3
Tea	-18.7	2.0	1.4	3.3	0.9	3.4
Coffee			-6.5		-6.5	
Cocoa			-6.7	0.8	0.6	-1.1
Sugar	-5.7	1.1	-2.2	0.7	3.0	1.0
Raw materials	-3.4	-3.3	-6.5	-2.0	12.1 *	-6.3
Cotton	-5.0	0.6	-9.0	1.8	24.9 *	-1.1
Jute			-6.8	-	-7.0	-
Sisal			-17.0	-4.6	-17.0	-4.6
Bovine hides and skins	0.7	-	-1.0	-	0.8 *	-
Sheep and goat skins	-6.5	1.8	-5.1	-7.4	-	-
Natural rubber			-3.0	7.9	-3.0	7.9

Note: a star (*) indicates net exports.

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Table 1.5. Industrialized economies: Past and projected growth of production, demand and trade

	Production		Demand		Net imports	
	1989*– 1999*	1999*– 2010	1989*– 1999*	1999*– 2010	1989*– 1999*	1999*– 2010
All commodities	1.4	0.9	1.0	0.9	-8.5	1.7
Basic foodstuffs	1.4	0.9	0.8	0.9	15.8 *	1.7 *
Cereals	1.7	0.7	1.3	0.7	0.2 *	1.4 *
Wheat	1.5	0.7	1.9	0.7	-0.6 *	1.4 *
Rice, milled	0.3	0.1	0.4	1.0	-0.5 *	-
Coarse grains	1.9	0.7	1.1	0.6	1.7 *	2.0 *
Maize	3.4	1.0	2.2	1.0	1.4 *	3.2 *
Millet and sorghum	-0.6	1.1	-4.0	0.0	3.5 *	3.8 *
Other coarse grains	-0.5	0.0	-0.5	-0.2	2.1 *	-0.9 *
Cassava			-6.6	1.9	-6.6	1.9
Oils and fats	4.3	1.3	3.9	1.8	-6.0	16.8
Oilcakes and meals	4.1	1.3	2.8	1.6	-2.0	2.9
Total meat	1.4	1.1	1.2	1.0	11.9 *	3.3 *
Beef and veal	0.4	0.4	0.6	0.1	-0.7 *	4.1 *
Mutton and lamb	-0.3	0.3	-0.7	-0.1	3.9 *	3.3 *
Pigmeat	1.4	1.2	1.1	1.1	- *	3.5 *
Poultry meat	3.7	2.3	2.9	2.2	27.9 *	2.7 *
Dairy products	0.4	0.7	0.3	0.6	1.2 *	2.5 *
Other commodities	1.6	0.8	2.2	1.0	2.0	1.7
Citrus and tropical fruits	1.9	1.2	3.3	1.4	3.5	2.6
Citrus fruits	1.9	1.2	3.1	1.0	3.3	2.0
Tropical fruits	2.6	2.4	4.0	3.8	4.3	4.1
Tropical beverages	0.7	2.3	2.0	0.6	1.4	0.7
Tea	0.7	2.3	-0.6	0.3	-0.6	0.2
Coffee			2.0	0.2	1.3	0.2
Cocoa			3.2	2.3	2.8	2.7
Sugar	1.4	0.4	0.9	0.3	5.0 *	1.7 *
Raw materials	1.2	0.0	-0.9	-0.4	- *	6.7 *
Cotton	2.6	-0.1	-1.8	-0.6	17.2 *	2.2 *
Jute			-5.1	-2.5	-5.2	-2.5
Abaca			0.7	2.1	0.7	2.1
Sisal	-10.1	-8.2	-7.6	-1.3	-7.5	-1.2
Coir			2.7	-0.8	2.7	-0.8
Bovine hides and skins	-0.4	0.1	-0.2	0.0	-0.9 *	0.1 *
Sheep and goat skins	-0.8	0.0	-4.1	1.0	- *	-3.1 *
Natural rubber			2.1	-0.5	2.1	-0.5

Note: a star (*) indicates net exports.

3. Food security prospects for most food-insecure countries

Introduction

This section focuses on the prospects for food insecure countries, in the context of medium term projections, and is intended to motivate further analysis of the role of commodity markets and commodity policies in the problem of food insecurity. It does this by examining some implications of the medium term projection for those countries which were identified in the FAO publication “The state of food insecurity in the world 2002” as having 35 percent or more of their populations undernourished.¹ It must be stressed that the existing projection framework for these countries is currently not adequate for a full review. While the country coverage of the projection is mostly complete for most food commodities, it is less so for non-food commodities; while coverage for commodity consumption is reasonably complete, it less so for commodity production. Moreover, the modelling framework does not allow the comprehensive analysis to consider the implications of policy developments at the national level on the vulnerable groups in these countries. However, an examination of the prospects for these countries will help foster discussion and further study of the role of policies and markets in the food security problem.

Market developments

Commodity market developments obviously play a significant role in the food security situation of these most food insecure countries. It is not only that agriculture’s share of total GDP averages about 30 percent, or that consistently over 70 percent of the populations of these countries are involved in agriculture. But with average per capita GDP at about one US\$ per day, resources expended on food are high relative to income, and for many of these countries, most calorie and protein intake is by definition low, and depends on relatively few

products. Furthermore, these food insecure countries are growingly dependent on food imports, as production has not kept pace with increasing demand, with high population growth at about 2.7 per cent. Food aid in recent years has been about 3 percent of total calorie intake, and while this may be low, it may critically affect key segments of the population. Finally, earnings from agricultural exports for these food insecure countries are not diversified but concentrated among two or three bulk commodities including tropical beverages, tobacco, fruit and vegetables, and agricultural raw materials. Against this background, and depending on each country’s openness and sensitivity to international markets, commodity and commodity policy developments, both domestically and globally may critically impact the food security situation of these countries.

Slow economic growth

In terms of the medium term prospects for the most food insecure countries, several factors indicate that there may be only limited improvement in their situations. Economic projections for these countries are mixed, with per capita GDP projected to be stagnant in some countries, or to show only moderate gains in others. In no case do the macroeconomic projections anticipate “high” rates of economic growth during the period. As noted in the Part II, market conditions for most of the bulk raw commodities are expected to remain weak over much of the period to 2010. Market prospects for tropical beverages and for agricultural raw materials, which form the basis of agricultural exports for these countries are characterised by relatively weak prices with high competition from other developing countries. The prospects for growth in export earnings appear limited.

Food availability

The composition of food consumption is estimated to remain unchanged and continue to depend on a relatively few number of traditional food commodities (Chart 8). In terms of domestic food availability for these countries, the production – utilisation deficit in cereals is projected to widen. The gap is expected to increase to 17 percent from 11 percent on average in 1998–2000. This results from higher domestic demand, stimulated by

¹ These countries are Afghanistan, Angola, Armenia, Bangladesh, Burundi, Cambodia, Central African Republic, Democratic Republic of the Congo, Eritrea, Ethiopia, Haiti, Kenya, Liberia, Madagascar, Mongolia, Mozambique, Niger, Rwanda, Sierra Leone, Somalia, Tajikistan, United Republic of Tanzania, Zambia and Zimbabwe.

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strong population growth and modest per capita income growth, and slowly growing domestic production. As a consequence, for the aggregate of basic food commodities, these countries are projected to increase their net-import spending. The share of net import in total cereal consumption is projected to increase from 15.2 percent in 1999* to 18.6 percent in 2010 and in the case of total meat from 2.4 to 10.7 percent. This, in itself, does not necessarily have negative food security implications. But it does point to higher reliance on external markets for food requirements, and the unease which is often expressed with such a situation, particular with potentially price-volatile markets and a high percentage of income spent on food.

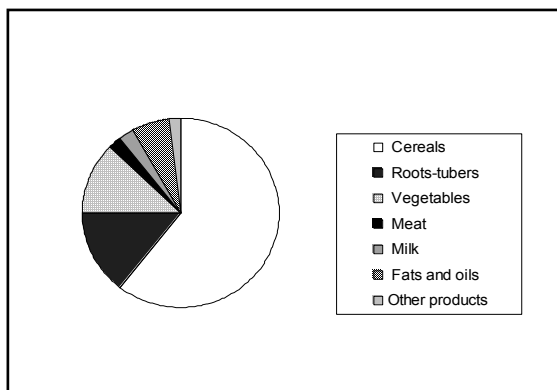


Chart 8. Most food insecure countries: composition of diet in terms of calorie intake by selected commodity groups (1998/2000 average)

Food consumption

Growth in per capita calorie consumption (Table 1.6 and Chart 9) is projected to remain slow. It is important to underline that projection figures are averages; distributional changes are perhaps as critical as average changes in average consumption. However, the projections show marginal improvement in the outlook for these countries, with average daily per capita calorie intake increasing by 5 percent by 2010, to just 2027 calories. This improvement is mostly due to projected growth in consumption of roots and tubers, fruit and vegetables. Changes in national income play an important role, and elasticities of demand for purchased foods with respect to income in these countries are high. For many, however, local production also plays a major role in nutritional prospects, particularly for crops such as roots and tubers, fruit and vegetables where trade activity is more limited.

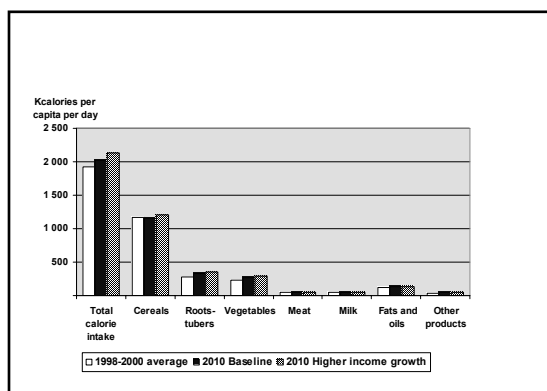


Chart 9. Most food insecure countries: actual consumption and projected demand by selected commodity groups

Higher income growth scenario

To evaluate the importance of increased national income to the improvement of food security in these countries, a higher income growth scenario was explored using an extended World Food Model.¹ Increasing GDP growth by a further 1 percent each year over the baseline, under the assumption that the additional income was generated outside agriculture (agricultural production was not adjusted), increased average calorie intake by 5.3 percent to 2 134 kcal/day by 2010. Income-induced increases in food consumption of traded foodstuffs - cereals, meat, oil and milk - explain about half of this improvement. International market prices were unaffected by the increase in demand by these countries, given their relatively small proportion of world markets. It appears therefore that while higher income growth is obviously a key to increasing nutritional intake and nourishment, it will take much higher growth to significantly improve the nutritional situation in the short to medium term. A successful approach to addressing the food security issue must also consider the role of targeted anti-hunger programmes, such as development assistance that generates greater local production/productivity of key food crops, or food aid in meeting the needs of the most food insecure.²

¹ For this scenario, equations were added for consumption of certain commodities, most particularly roots and tubers, to enable a more complete assessment of the impact of increased income growth.

² For further discussion, see for example Haddad, L., Alderman, H., Appleton, S., Song, L. and Yohannes, Y. Reducing child malnutrition: how far does income growth take us?, The World Bank Economic Review, Vol. 17, No.1, 107-131, 2003.

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Table 1.6. Consumption profile and projections for most food insecure countries

	1978–1980	1988–1990	1998–2000	Projections for 2010		
				Baseline	Higher income	Contribution
			<i>kcal/day</i>			<i>Percent</i>
Total calorie intake	2 044	1 987	1 930	2 027	2 134	100
Cereals	1 193	1 163	1 168	1 163	1 202	23.1
Wheat	194	186	187	196	204	5.1
Rice	560	573	571	572	588	9.8
Maize	261	260	267	245	255	5.9
Millet-sorghum	110	93	93	98	100	1.5
Other grains	68	52	50	53	55	0.9
Food aid (cereals)			59			
Roots and tubers	304	307	279	325	354	17.7
Vegetables	302	263	234	267	291	14.6
Meat	51	48	47	50	53	2.1
Beef	28	25	24	25	27	1.1
Pig meat	5	7	7	8	8	0.2
Poultry meat	5	5	5	5	6	0.1
Sheep meat	13	12	11	12	13	0.6
Milk	48	47	44	45	48	1.6
Fats and oils	98	115	117	132	138	3.8
Other products	48	44	40	45	49	2.4

In the higher income scenario the yearly GDP growth is assumed 1 percent higher than that of the baseline.
Source: FAOSTAT database and projections. Food aid data relates to 1999.

PART II – MEDIUM-TERM PROSPECTS FOR MAJOR AGRICULTURAL COMMODITY MARKETS

1. BASIC FOOD AND FEED CROPS

Cereals

Introduction

Global production of cereals is projected to grow 1.1 percent annually over the projection period, continuing a decline in per capita terms from the previous decade. However, there are differences among the various economic country groups. A major feature is the performance of the transition economies where cereal production fell 4 percent annually in the 1990s, but may increase by over 2 percent annually to 2010, mainly for wheat and coarse grains. For rice, high production growth is anticipated in Latin America and in Africa. However, in most regions and for each of these crops, the yield growth attained in previous decades is not expected to be achieved.

Aggregate demand for all cereals is growing slowly, especially for food use; feed demand supporting an expanding livestock sector is projected to be the main source of growth. While prices in real terms have been considerably below their long-term trend, they are projected to move back to trend levels by the end of the current decade. In the cases of maize and rice, prices could move somewhat above the trend as yield growth slows and demand remains steady.

Trade patterns for cereals are expected to change in the medium term. Aggregate wheat exports are projected to increase by over 20 percent by 2010, and countries such as Kazakhstan, the Russian Federation and Ukraine could become important market players. Exports by Argentina are projected to increase sharply, as are those by the EU. As a result, the more traditional wheat exporters such as the United States, Canada and Australia may find their market shares reduced. For rice, imports into Africa are projected to grow. Several developed markets are also expected to increase their rice imports as a result of new preference access programmes such as the EU's Everything-But-Arms (EBA) scheme.

In coarse grains markets, the United States is projected to increase its market share of maize exports, mainly as China, recently a large exporter, is anticipated to become a net importer in the medium term.

The market situation for cereals is critical from a food security perspective, particularly for developing countries where they are the main source of calories and protein. Current low inventory to use ratios of around 20 percent are projected to continue throughout the medium term, largely as a result of policy reforms. At these relatively low levels, upward price spikes are a potential risk. However, given cereal markets' apparent ability to respond to price changes, a price spike situation would not be expected to prevail for more than two to three years. Nevertheless, during this time, high prices may adversely impact food-insecure and low-income populations.

These projections are based on a specific set of assumptions, which may neglect to consider many important changes that could take place in the medium term. As far as cereal markets are concerned, these potential changes could be classified into two broad categories: (i) those associated with developments in large markets such as China and some of the economies in transition; and (ii) those stemming from impending policy developments, such as the EU enlargement and the outcome of the World Trade Organization (WTO) negotiations.

The outcome of the current WTO negotiations is an important factor that could affect these projections. In particular, reductions in trade distorting domestic support measures and export subsidies could have a major bearing on cereal supplies in several major markets. However, in view of the fact that the final decisions related to agriculture are unlikely to be made prior to January 2005, the mandated deadline in the Doha Declaration, the main impact of the new WTO commitments on the global cereal economy could only be expected to gain momentum towards the end of the projection period.

Basic food and feed crops

Table 2.1. Total cereals: production projections

	AREA				YIELD				PRODUCTION			
	Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010	
	(... 000 hectares...)		(...% per year...)		(... tonnes/ha...)		(...% per year...)		(... 000 tonnes...)		(...% per year...)	
WORLD	681 825	700 028	-0.4	0.2	2.8	3.0	1.6	0.9	1 883 697	2 125 634	1.1	1.1
DEVELOPING	437 253	452 850	0.2	0.3	2.4	2.6	1.7	0.8	1 028 554	1 165 876	1.9	1.1
AFRICA	86 161	96 490	1.7	1.0	1.1	1.3	0.4	1.1	96 607	121 526	2.0	2.1
NORTH AFRICA	12 009	12 287	0.6	0.2	2.1	2.5	1.5	1.6	25 303	30 742	2.2	1.8
Algeria	2 180	2 323	-0.4	0.6	0.9	1.1	2.7	2.0	1 960	2 587	2.3	2.6
Egypt	2 685	2 885	2.5	0.7	6.5	7.0	2.7	0.8	17 421	20 335	5.2	1.4
Morocco	5 509	5 268	0.0	-0.4	0.8	1.0	-5.4	2.8	4 156	5 388	-5.4	2.4
SUB SAHARA	74 152	84 203	1.8	1.2	1.0	1.1	0.2	1.0	71 303	90 784	2.0	2.2
Nigeria	17 851	21 341	2.3	1.6	1.2	1.3	0.2	0.9	21 122	27 921	2.6	2.6
Sudan	7 768	9 549	2.9	1.9	0.5	0.5	-0.1	0.2	4 098	5 136	2.8	2.1
LATIN AMER. & CARIB.	47 683	53 128	-0.4	1.0	2.7	3.0	3.1	1.0	127 327	157 606	2.7	2.0
CENTRAL AMERICA	12 728	13 718	0.4	0.7	2.5	2.6	1.6	0.5	32 040	36 304	2.0	1.1
Mexico	10 537	11 334	0.5	0.7	2.7	2.8	1.8	0.4	28 435	31 935	2.3	1.1
CARIBBEAN	824	797	0.3	-0.3	1.4	1.6	-0.3	1.4	1 158	1 312	-0.1	1.1
SOUTH AMERICA	34 131	38 613	-0.8	1.1	2.8	3.1	3.7	1.1	94 130	119 991	2.9	2.2
Argentina	10 676	11 650	2.0	0.8	3.4	3.9	4.2	1.1	36 697	45 216	6.2	1.9
Brazil	17 069	19 955	-2.2	1.4	2.4	2.8	3.6	1.1	41 771	55 367	1.3	2.6
ASIA	303 395	303 220	-0.1	0.0	2.7	2.9	1.9	0.9	804 599	886 726	1.8	0.9
NEAR EAST	30 107	32 219	-1.1	0.6	1.8	1.9	1.5	0.3	55 293	61 159	0.4	0.9
Iran Islamic Rep.	7 739	8 360	-2.0	0.7	1.8	2.1	4.2	1.0	14 282	17 184	2.1	1.7
Saudi Arabia	639	598	-3.8	-0.6	3.5	3.6	-1.6	0.1	2 256	2 127	-5.4	-0.5
Turkey	13 534	13 675	-0.1	0.1	2.2	2.2	0.4	0.1	29 171	29 771	0.4	0.2
SOUTH ASIA	129 654	128 282	0.0	-0.1	1.9	2.2	2.2	1.1	247 414	276 287	2.2	1.0
Bangladesh	11 472	11 818	0.4	0.3	2.1	2.6	2.7	1.7	24 557	30 341	3.1	1.9
India	101 305	99 427	-0.2	-0.2	1.9	2.1	2.2	1.0	189 165	207 713	2.0	0.9
Pakistan	12 637	12 645	0.8	0.0	2.1	2.3	2.6	1.1	26 299	29 648	3.4	1.1
SOUTH EAST ASIA	143 634	142 719	0.1	-0.1	3.5	3.8	1.7	0.9	501 892	549 280	1.8	0.8
China	89 684	86 944	-0.2	-0.3	4.2	4.7	2.0	1.0	378 176	407 151	1.8	0.7
Indonesia	15 421	15 559	1.3	0.1	2.7	2.9	0.1	0.8	41 599	45 638	1.4	0.8
Korea Rep.	1 170	988	-2.2	-1.5	4.8	5.2	0.5	0.7	5 579	5 099	-1.8	-0.8
Myanmar	6 559	7 337	2.5	1.0	2.0	2.0	1.1	0.2	12 997	14 850	3.6	1.2
Philippines	6 387	6 992	-1.2	0.8	1.9	2.0	2.2	0.8	11 888	14 143	1.0	1.6
Thailand	11 144	10 586	-0.2	-0.5	1.9	2.3	1.9	2.0	20 776	24 476	1.7	1.5
Viet Nam	8 249	8 518	2.4	0.3	2.7	3.1	3.0	1.2	22 455	26 486	5.5	1.5
OCEANIA	14	12	-1.7	-1.2	1.5	1.5	-1.1	-0.1	21	18	-2.8	-1.3
DEVELOPED	139 900	139 161	-0.8	0.0	4.7	5.2	2.7	0.8	660 850	717 532	1.8	0.8
NORTH AMERICA	77 614	77 431	-0.7	0.0	5.1	5.5	3.0	0.8	392 386	429 417	2.3	0.8
Canada	18 022	17 371	-1.6	-0.3	2.9	3.1	2.7	0.7	52 055	54 230	1.1	0.4
United States	59 592	60 059	-0.3	0.1	5.7	6.2	2.9	0.8	340 331	375 188	2.5	0.9
WESTERN EUROPE	38 027	37 668	-1.9	-0.1	5.6	6.1	3.1	0.7	213 108	228 499	1.1	0.6
EU (15)	37 508	37 165	-2.0	-0.1	5.6	6.1	3.1	0.7	210 582	225 939	1.1	0.6
OCEANIA	17 394	16 975	2.5	-0.2	2.0	2.2	1.7	0.9	34 860	37 525	4.3	0.7
Australia	17 260	16 849	2.6	-0.2	2.0	2.2	1.8	0.9	33 989	36 683	4.4	0.7
OTHER	6 864	7 087	-3.0	0.3	3.0	3.1	1.5	0.4	20 496	22 091	-1.6	0.7
Japan	2 048	1 877	-2.0	-0.8	4.5	4.8	0.5	0.7	9 167	9 059	-1.6	-0.1
South Africa	4 753	5 125	-3.4	0.7	2.4	2.5	2.0	0.6	11 228	12 864	-1.5	1.2
TRANSITIONAL	104 672	108 017	-2.3	0.3	1.9	2.2	-1.5	1.7	194 293	242 225	-3.8	2.0
EASTERN EUROPE	24 948	25 756	-0.5	0.3	3.2	3.5	-1.4	0.9	78 926	89 649	-1.9	1.2
Bulgaria	1 864	1 968	-1.2	0.5	2.9	3.5	-3.3	1.8	5 339	6 857	-4.5	2.3
Hungary	2 682	3 001	-0.5	1.0	4.3	4.8	-1.7	1.1	11 438	14 397	-2.2	2.1
Poland	8 785	8 770	0.4	0.0	2.9	3.0	-0.9	0.5	25 082	26 411	-0.5	0.5
Romania	5 450	5 786	-0.8	0.5	2.6	2.9	-1.7	0.9	14 218	16 569	-2.5	1.4
CIS	77 909	80 559	78.3	0.3	1.4	1.8	0.0	2.3	111 478	148 586	0.0	2.6
Kazakhstan	11 544	12 151	0.0	0.5	0.9	1.2	0.0	2.0	10 873	14 297	0.0	2.5
Russian Fed.	46 563	46 624	0.0	0.0	1.3	1.7	0.0	2.8	58 488	79 580	0.0	2.8
Ukraine	12 117	13 513	0.0	1.0	2.2	2.6	0.0	1.6	26 536	35 067	0.0	2.6
BALTIC	1 816	1 703	0.0	-0.6	2.1	2.3	0.0	0.8	3 889	3 989	0.0	0.2
LIFDC	336 728	344 225	0.5	0.2	2.4	2.6	1.5	0.8	801 497	896 604	1.9	1.0
LDC	75 274	82 795	1.6	0.9	1.2	1.4	1.0	1.0	91 043	111 929	2.6	1.9
NFDC	30 137	31 098	0.6	0.3	2.1	2.4	1.7	1.3	62 117	73 852	2.4	1.6

^{1/} 1998-2000 Average

Basic food and feed crops

Table 2.3 - Total cereals: trade projections

	IMPORTS				EXPORTS				IMPORT SHARE		EXPORT SHARE	
	Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010 (...% per year...)		Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010 (...% per year...)		Base Period ^{1/}	Projection 2010	Base Period ^{1/}	Projection 2010
WORLD	233 213	279 717	0.5	1.7	233 213	278 963	2.2	1.6	100.0	100.0	100.0	100.0
DEVELOPING	171 362	216 468	2.5	2.1	59 371	66 996	7.4	1.1	73.5	77.4	25.5	24.0
AFRICA	42 980	54 161	3.3	2.1	2 187	2 341	2.9	0.6	18.4	19.4	0.9	0.8
NORTH AFRICA	25 880	29 525	2.0	1.2	501	884	18.9	5.3	11.1	10.6	0.2	0.3
Algeria	6 818	7 450	0.6	0.8			0.0	0.0	2.9	2.7	0.0	0.0
Egypt	10 550	12 069	1.4	1.2	501	884	19.0	5.3	4.5	4.3	0.2	0.3
Morocco	4 494	5 428	9.3	1.7			0.0	0.0	1.9	1.9	0.0	0.0
SUB SAHARA	17 100	24 636	5.8	3.4	1 686	1 457	0.8	-1.3	7.3	8.8	0.7	0.5
Nigeria	2 963	4 221	15.3	3.3	148	418	9.1	9.9	1.3	1.5	0.1	0.1
Sudan	1 311	1 633	5.7	2.0	333	140	-3.7	-7.6	0.6	0.6	0.1	0.1
LATIN AMER. & CARIB.	42 882	47 881	6.2	1.0	24 920	33 535	9.7	2.7	18.4	17.1	10.7	12.0
CENTRAL AMERICA	16 565	19 961	5.6	1.7	484	272	14.8	-5.1	7.1	7.1	0.2	0.1
Mexico	13 122	15 903	4.9	1.8	443	215	13.9	-6.4	5.6	5.7	0.2	0.1
CARIBBEAN	4 249	5 105	-0.6	1.7	285	285	47.3	0.0	1.8	1.8	0.1	0.1
SOUTH AMERICA	22 067	22 815	8.8	0.3	24 151	32 977	9.5	2.9	9.5	8.2	10.4	11.8
Argentina	39	41	49.8	0.5	22 098	29 043	9.8	2.5	0.0	0.0	9.5	10.4
Brazil	10 035	8 713	11.7	-1.3	200	1 742	17.2	21.7	4.3	3.1	0.1	0.6
ASIA	84 902	113 649	0.8	2.7	32 264	31 120	6.3	-0.3	36.4	40.6	13.8	11.2
NEAR EAST	33 831	44 988	1.8	2.6	4 324	3 100	3.2	-3.0	14.5	16.1	1.9	1.1
Iran Islamic Rep.	8 433	9 760	2.1	1.3	3	3	0.0	0.0	3.6	3.5	0.0	0.0
Saudi Arabia	7 280	9 250	0.9	2.2			0.0	0.0	3.1	3.3	0.0	0.0
Turkey	2 772	5 294	0.5	6.1	2 641	1 939	12.3	-2.8	1.2	1.9	1.1	0.7
SOUTH ASIA	7 077	11 382	1.2	4.4	5 459	6 595	12.5	1.7	3.0	4.1	2.3	2.4
Bangladesh	2 625	3 044	3.1	1.4			0.0	0.0	1.1	1.1	0.0	0.0
India	1 356	2 490	0.3	5.7	2 838	4 441	14.5	4.2	0.6	0.9	1.2	1.6
Pakistan	1 753	3 819	-0.8	7.3	2 618	2 145	10.9	-1.8	0.8	1.4	1.1	0.8
SOUTH EAST ASIA	43 993	57 279	0.0	2.4	22 481	21 425	5.9	-0.4	18.9	20.5	9.6	7.7
China	10 172	17 694	-8.2	5.2	9 993	2 012	6.8	-13.6	4.4	6.3	4.3	0.7
Taiwan Province	6 186	7 242	-1.2	1.4	134	6	4.2	-24.9	2.7	2.6	0.1	0.0
Indonesia	8 174	9 300	13.6	1.2	210	211	15.1	0.0	3.5	3.3	0.1	0.1
Korea Rep.	12 753	14 194	2.0	1.0	47		41.7	-60.0	5.5	5.1	0.0	0.0
Myanmar	38	107	6.0	9.9	388	2 348	10.0	17.8	0.0	0.0	0.2	0.8
Philippines	3 975	5 368	7.0	2.8	152	152	28.3	0.1	1.7	1.9	0.1	0.1
Thailand	1 067	1 518	10.1	3.3	7 316	9 839	2.5	2.7	0.5	0.5	3.1	3.5
Viet Nam	586	1 260	3.4	7.2	4 090	6 034	11.6	3.6	0.3	0.5	1.8	2.2
OCEANIA	597	778	2.6	2.4			0.0	0.0	0.3	0.3	0.0	0.0
DEVELOPED	47 312	51 317	-0.1	0.7	158 019	184 547	0.2	1.4	20.3	18.3	67.8	66.2
NORTH AMERICA	7 468	7 577	8.1	0.1	107 831	125 974	0.0	1.4	3.2	2.7	46.2	45.2
Canada	1 964	2 277	7.5	1.4	20 104	21 482	0.1	0.6	0.8	0.8	8.6	7.7
United States	5 504	5 299	8.3	-0.3	87 727	104 491	-0.1	1.6	2.4	1.9	37.6	37.5
WESTERN EUROPE	7 725	9 839	-3.5	2.2	26 538	32 319	-1.4	1.8	3.3	3.5	11.4	11.6
EU (15)	6 496	8 210	-3.9	2.2	26 528	32 309	-1.4	1.8	2.8	2.9	11.4	11.6
OCEANIA	354	558	2.0	4.2	21 620	23 791	5.0	0.9	0.2	0.2	9.3	8.5
Australia	48	53	4.1	0.9	21 613	23 785	5.0	0.9	0.0	0.0	9.3	8.5
OTHER	31 765	33 343	-0.4	0.4	2 030	2 464	-3.4	1.8	13.6	11.9	0.9	0.9
Japan	27 165	27 780	-1.1	0.2	913	927	9.2	0.1	11.6	9.9	0.4	0.3
South Africa	1 579	2 091	6.1	2.6	1 117	1 537	-7.7	2.9	0.7	0.7	0.5	0.6
TRANSITIONAL	14 540	11 931	-9.8	-1.8	15 823	27 420	14.6	5.1	6.2	4.3	6.8	9.8
EASTERN EUROPE	4 505	4 434	-3.3	-0.1	5 987	9 299	5.8	4.1	1.9	1.6	2.6	3.3
Bulgaria	195	200	-12.9	0.2	987	1 817	8.1	5.7	0.1	0.1	0.4	0.7
Hungary	82	76	-17.1	-0.7	2 606	4 256	4.9	4.6	0.0	0.0	1.1	1.5
Poland	1 401	1 150	-5.5	-1.8	215	217	1.0	0.1	0.6	0.4	0.1	0.1
Romania	563	687	-8.1	1.8	598	1 264	8.6	7.0	0.2	0.2	0.3	0.5
CIS	9 607	6 903	0.0	-3.0	9 478	17 896	0.0	5.9	4.1	2.5	4.1	6.4
Kazakhstan	28	15	0.0	-5.4	4 459	6 099	0.0	2.9	0.0	0.0	1.9	2.2
Russian Fed.	4 676	1 859	0.0	-8.0	1 195	3 407	0.0	10.0	2.0	0.7	0.5	1.2
Ukraine	560	716	0.0	2.3	3 506	8 003	0.0	7.8	0.2	0.3	1.5	2.9
BALTIC	428	594	0.0	3.0	358	225	0.0	-4.1	0.2	0.2	0.2	0.1
LIFDC	66 695	92 699	2.2	3.0	18 695	12 845	7.6	-3.4	28.6	33.1	8.0	4.6
LDC	15 067	23 710	4.1	4.2	2 237	3 933	7.5	5.3	6.5	8.5	1.0	1.4
NFIDC	32 936	39 919	2.5	1.8	3 469	3 494	11.5	0.1	14.1	14.3	1.5	1.3

^{1/} 1998-2000 Average

Wheat***Production***

World wheat output is projected to rise by roughly 1.3 percent per annum during the projection period, to 679 million tonnes by 2010. This would represent an increase of about 12 million tonnes, or 15 percent, from the base period. Wheat output is projected to grow at a faster pace during the projection period than in the 1990s, supported by a strong take-off in the transition countries and faster growth among the major wheat producing countries of Latin America and the Caribbean.

Most transitional economies are projected to experience faster output growth. The sharp contraction in consumption experienced in the 1990s was the main factor underlying the reduction in their output in that period. Given their improved economic prospects, a rebound in demand in those countries will encourage more investment in farming, which will in turn result in expansions in planting area as well as yields. The Russian Federation and Ukraine are likely to be on the forefront of this development.

In Latin America and the Caribbean, the largest expansion is projected for Brazil, mainly in response to fast growing domestic demand. Wheat production in Mexico is also projected to reverse the downward trend of the 1990s, with durum wheat the main beneficiary because it attains better yields and is more resistant to disease. Higher planted area coupled with some increase in yields would also lead to a rise in wheat production in Argentina. The recent devaluation of Argentinian peso and, most importantly, its fixing at parity to the US dollar, has increased the profitability of wheat exports, and this development could give rise to increased plantings and higher yields in the coming years.

For the developing countries as a group, wheat production is projected to rise by only 1.2 percent per annum or nearly half as fast as in the 1990s. The slowest growth is projected for Africa and Asia. Among the main factors contributing to this deceleration is sagging growth in yield improvement, owing mostly to water scarcity problems coupled with the more limited possibilities to bring new land into

production. In Africa, harvested area is projected to contract in most wheat growing countries, except in Egypt, Ethiopia and Tanzania where plantings are projected to expand, albeit slightly and at a slower pace than in the 1990s. In Asia, most countries are likely to register an increase in their production but the growth would be more subdued than in the 1990s, especially in India and Bangladesh, mainly due to reduced plantings. In China, the gradual shift away from quantity to quality grains would also limit growth in planted areas.

Among the developed countries, in the United States the continuation of domestic support policies, including the increase in marketing loan benefits in low price years, would give rise to higher yields and plantings, leading to a steady growth in production. Wheat production in the EU (15) would also increase, supported by small advancement in yields and some rise as well in plantings. However, the addition of ten new European Member States (from May 2004) and any possible reform of the Common Agriculture Policy (CAP) could significantly alter the current projection results. In particular, the adoption of the CAP and the gradual harmonization of the policies by the new members could bring fundamental changes to the wheat balance of the enlarged EU in the coming years, given the importance of such large wheat producers as Poland and Hungary among them.

Consumption

Total wheat utilization is also estimated to rise by around 1.3 percent annually during the projection period, mostly due to growth in developing countries, and an expected increase in demand in the transition economies, reversing their downward trend in the 1990s.

Among the main utilization categories, the direct food consumption of wheat is projected to expand by 1.2 percent per year to 483 million tonnes by 2010. Direct food consumption continues to represent the largest share of total wheat utilization and that mainly in the developing countries. Rising population and income as well as continued urbanization are among the main factors for a steady increase in food consumption of wheat in the developing countries. Among the various

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economic groupings, the most pronounced rise in terms of per capita food consumption of wheat is projected for the food unsecured countries.

The other major use of wheat is for animal feed, which is projected to rise by 1.6 percent per annum, thus a relatively strong growth in contrast to a contraction observed in the 1990s. Wheat used for animal feeds is usually of lower quality. A leading factor for the projected increase in feed wheat requirements during the projection period would be the more favourable demand prospects from livestock sectors in many countries, especially transitional economies and those with faster economic growth. In addition, a continuing resistance to genetically modified (GM) maize (for feed) in a number of important markets could also lend support to stronger demand for feed wheat as a substitute.

Trade

Global wheat trade is projected to expand significantly during the outlook period after slow growth during the 1990s. Rising by nearly 2 percent per year, world trade in wheat and wheat flour (in grain equivalent) would reach the all-time high of 129 million tonnes. Nearly all of this expansion would be attributed to higher import demand among the developing countries, especially China, where imports by 2010 are projected at only 3 million tonnes; hence, well below the Tariff Rate Quotas (TRQ) amount of 9.6 million tonnes (from 2004). At the current projected level, the global import share of the developing countries would rise from 77 percent in the late 1990s to 83 percent in 2010. This expansion would be mostly on account of a continuing rapid increase in import demand in Asia and Africa, capturing 43 percent and 23 percent respectively of the global share.

On the export side, the developed countries' market share is expected to reach 71 percent by 2010, slightly lower than in the base period. The transitional economies are projected to increase their exports because of considerably larger surpluses, turning them into important players in the global wheat market. By contrast, the overall share of the traditional major exporters is projected to decline slightly.

Australia, Canada and the United States could find their market share fall, even though this would not necessarily imply a decline in the absolute level of their exports. Wheat shipments by Argentina and the EU (15) are projected to increase, leading to some increase in their market share. Kazakhstan, the Russian Federation and Ukraine are set to rank among the leading wheat exporters. Wheat exports by the Russian Federation and Ukraine already surged in 2002/03 to levels well above the projections for 2010. However, given the uncertain nature of year-on-year developments in exportable supplies of these countries, it is extremely difficult at this point to predict the eventual outcome by 2010 with any precision.

Stocks and prices

World wheat stocks continue to contract during the projected period because many countries are likely to maintain and/or continue to reverse policies which led to large stock accumulations in the 1990s. Most of the decline in world stocks would be in China, while inventories among major exporters are also projected to contract. However, higher projected stocks in several transitional economies are seen to make up most of the decline among major exporters. The net effect would be a smaller stock-to-inventory ratio by 2010 (24 percent), compared to the base period (41 percent).

The tighter supply situation would, therefore, put pressure on international prices that could return the real wheat price from recent low levels to the long-term trend by 2010. The market for higher quality wheat points to a more balanced situation, leading to steady or even firmer prices.

Issues and uncertainties

In China, the projections point to a 1.2 percent annual production expansion through 2010. At this rate, domestic supplies are projected to cover most of requirements to the extent that imports would be relatively marginal and well below the TRQ amount. However, sweeping changes in the supply and demand structure across China and, in particular, deliberate policies to downsize wheat inventories in

recent years, raises important questions about China's position in world markets by 2010. It may be unrealistic to assume a long continuation of large-scale depletion of stocks, but should production fail to keep up with consumption, as has been the case in recent years, China will need to enter the world market as a more significant importer than is currently projected. This eventuality could give rise to much higher world trade and boost international wheat prices as well. The impact on the latter, however, will also be conditioned on the eventual size of export availabilities, yet another uncertain factor.

In particular, significant uncertainties exist regarding the size of exportable supplies among non-traditional wheat exporters, especially those belonging to the transition economies, with the Russian Federation and Ukraine at the forefront. Between 1999 and 2002, these countries emerged as the world's leading wheat exporters, supported by consecutive years of good harvests. Notwithstanding this development, the potential for these countries to sustain high production levels and exports is still very difficult to predict. This is evidenced by sharp year-to-year fluctuations in production in recent years.

The medium-term prospects for the global wheat market will also be influenced by policies. The recently agreed reform of the EU Common Agricultural Policy (CAP), to take effect from 2005, may have some limited consequences for world wheat markets by 2010. The reformed CAP aims at severing the link between subsidies and production, mainly through the introduction of single farm payments and the eventual decoupling of direct payments to production. However, with the primary aspects of the support measures to wheat producers mostly intact, the most important driving force is probably not to be found in the CAP reform as such, but in the EU enlargement.

The EU enlargement could have ramifications for the international wheat market given the importance of such large wheat producers among the new members, namely Poland and Hungary. The gradual adoption of the CAP would lead to more stable income and higher domestic prices, which could in turn stimulate wheat production among the new members and pave the way for larger exportable wheat surpluses for the EU (25). The ability to export the surpluses, however, could be compromised if the Euro continues to remain strong following the EU expansion.

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Table 2.4. Wheat: production projections

	AREA				YIELD				PRODUCTION			
	Base	Projection	Growth Rates		Base	Projection	Growth Rates		Base	Projection	Growth Rates	
	Period ^{1/}	2010	1989-99	99-2010	Period ^{1/}	2010	1989-99	99-2010	Period ^{1/}	2010	1989-99	1999-2010
	(. . . 000 hectares . . .)		(. . . % per year . . .)		(. . . tonnes/ha . . .)		(. . . % per year . . .)		(. . . 000 tonnes . . .)		(. . . % per year . . .)	
WORLD	219 742	224 304	-0.3	0.2	2.7	3.0	1.1	1.1	590 629	678 588	0.8	1.3
DEVELOPING	102 972	105 244	0.2	0.2	2.7	3.0	1.8	1.0	274 614	312 703	2.0	1.2
AFRICA	8 128	8 190	2.2	0.1	1.7	2.0	0.4	1.5	14 143	16 728	2.6	1.5
NORTH AFRICA	6 584	6 516	2.3	-0.1	1.8	2.1	0.6	1.6	11 835	13 909	2.9	1.5
Algeria	1 592	1 589	2.6	0.0	0.9	1.2	3.3	2.2	1 503	1 910	6.0	2.2
Egypt	1 017	1 046	4.0	0.3	6.2	6.6	2.2	0.5	6 335	6 913	6.3	0.8
Morocco	2 893	2 802	1.3	-0.3	0.9	1.2	-4.9	2.6	2 637	3 391	-3.7	2.3
SUB-SAHARA	1 544	1 674	1.6	0.7	1.5	1.7	-0.6	1.1	2 308	2 819	1.0	1.8
Nigeria	40	41	-2.3	0.2	1.1	1.4	-0.2	2.6	42	57	-2.4	2.8
Sudan	123	179	-6.5	3.4	1.8	2.0	0.0	0.8	227	358	-6.5	4.2
LATIN AMER. & CARIB.	9 209	10 252	-1.5	1.0	2.4	2.8	1.9	1.2	22 391	28 329	0.4	2.2
CENTRAL AMERICA	701	714	-3.7	0.2	4.6	4.8	1.5	0.3	3 232	3 414	-2.2	0.5
Mexico	696	709	-3.5	0.2	4.6	4.8	1.5	0.3	3 228	3 409	-2.1	0.5
CARIBBEAN			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
SOUTH AMERICA	8 509	9 538	-1.3	1.0	2.3	2.6	2.2	1.4	19 159	24 915	0.9	2.4
Argentina	6 090	6 733	1.5	0.9	2.4	2.8	2.5	1.4	14 620	18 880	4.0	2.4
Brazil	1 382	1 699	-7.9	1.9	1.5	1.9	-0.1	1.9	2 083	3 146	-8.0	3.8
ASIA	85 635	86 802	0.3	0.1	2.8	3.1	1.9	0.9	238 080	267 645	2.2	1.1
NEAR EAST	19 763	21 019	-0.3	0.6	1.9	1.8	1.0	0.0	36 623	38 849	0.7	0.5
Iran Islamic Rep.	5 473	6 174	-1.5	1.1	1.7	1.8	4.6	0.3	9 547	11 083	3.0	1.4
Saudi Arabia	422	348	-5.7	-1.7	4.4	4.4	-0.3	0.0	1 860	1 530	-5.9	-1.8
Turkey	8 917	9 013	-0.5	0.1	2.1	2.0	0.2	-0.3	18 500	18 041	-0.2	-0.2
SOUTH ASIA	37 021	36 030	1.4	-0.2	2.5	2.9	2.2	1.4	93 292	105 393	3.6	1.1
Bangladesh	840	796	3.7	-0.5	2.2	2.4	2.4	1.0	1 807	1 908	6.2	0.5
India	27 176	26 020	1.4	-0.4	2.6	3.1	2.1	1.6	71 164	80 852	3.6	1.2
Pakistan	8 349	8 565	0.9	0.2	2.3	2.5	2.4	0.8	19 210	21 469	3.4	1.0
SOUTH EAST ASIA	28 851	29 753	-0.6	0.3	3.7	4.1	2.2	0.9	108 165	123 403	1.6	1.2
China	28 427	29 222	-0.5	0.3	3.8	4.2	2.1	0.9	107 747	122 782	1.6	1.2
Indonesia			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Korea Rep.	1	1	0.0	-2.5	4.0	4.1	0.0	0.1	4	3	11.6	-2.4
Philippines			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
OCEANIA			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
DEVELOPED	63 988	63 512	-0.7	-0.1	3.4	3.7	2.2	0.8	219 248	237 308	1.5	0.7
NORTH AMERICA	33 057	32 471	-1.5	-0.2	2.7	2.8	2.3	0.4	90 160	92 031	0.7	0.2
Canada	10 670	10 067	-2.4	-0.5	2.4	2.6	3.1	0.5	25 942	25 831	0.7	0.0
United States	22 387	22 404	-1.1	0.0	2.9	3.0	1.8	0.3	64 218	66 199	0.7	0.3
WESTERN EUROPE	17 614	18 195	-0.6	0.3	5.9	6.5	2.3	1.0	103 051	118 434	1.7	1.3
EU (15)	17 454	18 029	-0.6	0.3	5.9	6.5	2.4	1.0	102 174	117 425	1.7	1.3
OCEANIA	12 297	11 599	3.1	-0.5	1.9	2.0	1.7	0.6	23 343	23 485	4.8	0.1
Australia	12 250	11 551	3.1	-0.5	1.9	2.0	1.6	0.6	23 016	23 168	4.8	0.1
OTHER	1 020	1 247	-7.3	1.8	2.6	2.7	4.6	0.2	2 694	3 358	-3.0	2.0
Japan	171	190	-4.6	0.9	3.6	3.9	0.0	0.8	614	740	-4.6	1.7
South Africa	800	986	-7.8	1.9	2.5	2.5	6.3	0.0	1 990	2 461	-2.0	2.0
TRANSITIONAL	52 782	55 548	-0.9	0.5	1.8	2.3	-2.0	2.1	96 768	128 578	-2.9	2.6
EASTERN EUROPE	9 087	9 567	-0.8	0.5	3.3	3.8	-2.2	1.1	30 348	35 937	-3.0	1.5
Bulgaria	1 050	1 120	-1.0	0.6	3.0	3.6	-3.8	1.6	3 176	4 026	-4.7	2.2
Hungary	981	1 085	-2.4	0.9	3.8	4.3	-3.2	1.1	3 749	4 675	-5.5	2.0
Poland	2 616	2 527	1.7	-0.3	3.5	3.8	-0.9	0.9	9 030	9 594	0.8	0.6
Romania	1 866	2 081	-2.1	1.0	2.5	3.0	-2.9	1.5	4 747	6 250	-4.9	2.5
CIS	43 151	45 418	88.1	0.5	1.5	2.0	0.0	2.6	64 988	91 089	0.0	3.1
Kazakhstan	9 298	9 955	0.0	0.6	0.9	1.1	0.0	1.8	8 611	11 223	0.0	2.4
Russian Fed.	24 109	24 756	0.0	0.2	1.4	1.9	0.0	3.2	32 803	47 753	0.0	3.5
Ukraine	5 575	6 176	0.0	0.9	2.6	3.3	0.0	2.3	14 333	20 311	0.0	3.2
Uzbekistan	1 381	1 444	0.0	0.4	2.6	3.1	0.0	1.7	3 559	4 478	0.0	2.1
BALTIC	544	562	0.0	0.3	2.6	2.8	0.0	0.4	1 432	1 552	0.0	0.7
LIFDC	78 097	78 465	1.0	0.0	2.9	3.3	1.6	1.2	226 614	259 625	2.6	1.2
LDC	5 108	5 089	2.3	0.0	1.4	1.6	0.7	1.2	7 216	8 226	2.9	1.2
NFDC	13 428	13 614	1.4	0.1	2.2	2.5	1.6	1.0	29 740	33 755	3.0	1.2

Table 2.5. Wheat: utilization projections

	TOTAL UTILIZATION				FOOD				FEED				PER CAPITA FOOD	
	Base	Projection	Growth Rates		Base	Projection	Growth Rates		Base	Projection	Growth Rates		Base	Projection
	Period ^{1/}	2010	89-99	99-2010	Period ^{1/}	2010	89-99	99-2010	Period ^{1/}	2010	89-99	99-2010	Period ^{1/}	2010
	(... 000 tonnes ...)		(...% per year ...)		(... 000 tonnes ...)		(...% per year ...)		(... 000 tonnes ...)		(...% per year ...)		(... Kg/year ...)	
WORLD	594 074	682 808	0.6	1.3	422 422	483 290	1.1	1.2	101 464	120 632	-1.3	1.6	70.0	70.4
DEVELOPING	343 825	405 484	1.7	1.5	294 886	349 527	1.8	1.6	14 341	17 838	1.9	2.0	62.3	63.2
AFRICA	38 905	46 156	2.1	1.6	33 806	41 217	1.8	1.8	2 799	2 391	10.2	-1.4	43.1	41.0
NORTH AFRICA	28 861	32 366	1.5	1.0	24 151	27 880	1.0	1.3	2 765	2 342	10.4	-1.5	171.5	164.9
Algeria	6 599	7 242	1.9	0.8	4 372	5 423	-0.1	2.0	1 709	1 220	14.4	-3.0	142.1	141.6
Egypt	12 869	14 082	1.6	0.8	12 147	13 383	1.4	0.9	104	97	-3.4	-0.6	180.7	167.2
Morocco	5 739	6 698	0.6	1.4	4 711	5 545	0.7	1.5	610	621	7.7	0.2	169.0	169.0
SUB-SAHARA	10 044	13 791	4.0	2.9	9 654	13 338	4.1	3.0	34	50	1.0	3.6	15.0	15.9
Nigeria	1 699	2 198	14.7	2.4	1 647	2 134	14.8	2.4	2	3	-2.3	5.1	15.1	15.4
Sudan	1 278	1 749	3.2	2.9	1 255	1 720	3.8	2.9			0.0	0.0	43.5	47.4
LATIN AMER. & CARIB..	30 482	36 187	1.2	1.6	27 430	32 767	1.7	1.6	1 710	2 110	0.0	1.9	53.6	55.1
CENTRAL AMERICA	6 626	7 831	1.2	1.5	5 054	6 271	1.4	2.0	1 119	1 036	0.9	-0.7	38.1	39.7
Mexico	5 363	6 179	0.8	1.3	3 826	4 639	0.8	1.8	1 119	1 036	0.9	-0.7	39.3	41.1
CARIBBEAN	1 963	2 445	-1.9	2.0	1 922	2 401	0.4	2.0	16	17	-28.5	0.6	54.5	61.2
SOUTH AMERICA	21 893	25 910	1.5	1.5	20 454	24 094	2.0	1.5	574	1 057	9.6	5.7	59.5	60.5
Argentina	4 976	5 546	-0.2	1.0	4 255	4 653	0.3	0.8	249	602	7.2	8.4	116.3	112.2
Brazil	9 335	11 054	2.5	1.5	8 924	10 498	3.0	1.5	203	300	0.0	3.6	53.1	55.0
ASIA	274 138	322 763	1.7	1.5	233 380	275 196	1.8	1.5	9 832	13 336	0.8	2.8	68.1	70.2
NEAR EAST	50 092	60 413	1.2	1.7	39 382	49 534	2.1	2.1	2 980	3 048	-3.3	0.2	158.0	157.6
Iran Islamic Rep.	15 216	17 042	2.7	1.0	11 875	14 025	2.4	1.5	1 069	1 217	5.6	1.2	177.8	182.3
Saudi Arabia	1 801	2 429	0.4	2.8	1 638	2 241	2.0	2.9	66	78	-9.1	1.5	78.4	77.9
Turkey	18 526	20 849	-0.4	1.1	12 850	14 733	1.6	1.3	1 170	1 265	-8.4	0.7	196.1	193.7
SOUTH ASIA	92 704	113 835	2.8	1.9	80 415	101 097	2.4	2.1	1 587	1 256	5.4	-2.1	60.9	64.9
Bangladesh	3 467	4 023	1.9	1.4	2 598	3 321	0.6	2.3	50	41	0.0	-1.9	20.5	21.9
India	66 314	81 691	2.8	1.9	57 746	71 760	2.4	2.0	1 100	916	4.6	-1.7	57.9	62.3
Pakistan	20 821	25 480	3.0	1.9	18 376	23 810	2.6	2.4	411	265	6.6	-3.9	120.6	119.2
SOUTH EAST ASIA	131 342	148 515	1.1	1.1	113 583	124 565	1.2	0.8	5 265	9 032	2.8	5.0	61.1	60.8
China	117 111	130 375	0.9	1.0	102 839	109 214	1.0	0.5	2 674	7 132	0.8	9.3	80.7	79.1
Indonesia	3 552	4 972	5.4	3.1	3 259	4 750	4.9	3.5	185	104	0.0	-5.1	15.6	20.0
Korea Rep.	3 977	4 041	1.7	0.1	2 194	2 537	1.3	1.3	1 431	1 158	3.5	-1.9	47.2	50.8
Philippines	2 688	3 767	6.6	3.1	2 111	3 342	4.7	4.3	463	301	22.9	-3.8	28.3	36.9
OCEANIA	300	378	2.2	2.1	271	347	1.9	2.3			0.0	0.0	38.4	39.5
DEVELOPED	151 255	163 020	1.9	0.7	77 654	81 722	0.7	0.5	56 876	64 983	3.9	1.2	87.3	88.5
NORTH AMERICA	45 085	45 898	1.0	0.2	28 315	31 206	1.2	0.9	13 277	11 152	1.9	-1.6	92.2	94.0
Canada	8 440	8 976	1.0	0.6	2 889	3 105	0.5	0.7	4 355	4 647	3.1	0.6	93.6	91.5
United States	36 645	36 922	1.0	0.1	25 426	28 100	1.2	0.9	8 922	6 504	1.3	-2.8	92.1	94.3
WESTERN EUROPE	89 665	99 175	2.6	0.9	38 794	39 278	0.7	0.1	39 534	49 011	4.4	2.0	100.1	100.9
EU (15)	88 126	97 543	2.7	0.9	37 718	38 161	0.7	0.1	39 154	48 559	4.5	2.0	100.6	101.6
OCEANIA	6 129	6 640	4.0	0.7	1 950	2 216	-1.8	1.2	2 872	3 187	9.6	1.0	86.5	89.3
Australia	5 625	6 083	4.1	0.7	1 615	1 843	-2.2	1.2	2 742	3 034	9.5	0.9	86.4	89.4
OTHER	10 375	11 308	-0.2	0.8	8 595	9 023	-0.4	0.4	1 193	1 633	2.9	2.9	49.8	51.0
Japan	6 282	6 173	-1.1	-0.2	5 426	5 295	-0.8	-0.2	453	481	-3.5	0.5	42.9	41.6
South Africa	2 538	3 140	-0.5	2.0	2 419	2 825	-0.2	1.4	52	213	-7.0	13.7	60.6	66.4
TRANSITIONAL	98 995	114 303	-3.7	1.3	49 882	52 042	-1.5	0.4	30 247	37 812	-7.3	2.1	120.8	125.6
EASTERN EUROPE	30 177	31 414	-2.9	0.4	16 195	16 211	-1.0	0.0	10 407	11 312	-4.7	0.8	133.6	134.5
Bulgaria	2 599	2 650	-6.3	0.2	1 691	1 556	-0.6	-0.8	638	804	-11.9	2.1	204.2	200.7
Hungary	2 798	2 865	-6.3	0.2	1 410	1 483	-0.6	0.5	1 037	962	-10.2	-0.7	139.9	154.0
Poland	9 644	9 802	-0.2	0.1	4 267	4 331	-0.6	0.1	4 288	4 341	0.0	0.1	110.1	110.5
Romania	5 100	5 251	-4.0	0.3	3 111	3 030	-0.9	-0.2	1 205	1 320	-6.4	0.8	138.9	140.7
CIS	67 355	81 272	0.0	1.7	33 177	35 327	0.0	0.6	19 058	25 597	0.0	2.7	116.8	123.1
Kazakhstan	5 243	6 066	0.0	1.3	2 288	2 336	0.0	0.2	611	1 023	0.0	4.8	140.6	141.6
Russian Fed.	36 054	45 589	0.0	2.2	16 011	16 417	0.0	0.2	11 437	16 159	0.0	3.2	108.8	113.7
Ukraine	13 168	14 422	0.0	0.8	6 308	6 303	0.0	0.0	4 223	5 107	0.0	1.7	124.5	129.4
Uzbekistan	4 112	5 185	0.0	2.1	3 123	4 078	0.0	2.5	497	607	0.0	1.8	130.4	144.8
BALTIC	1 463	1 617	0.0	0.9	510	504	0.0	-0.1	781	903	0.0	1.3	68.2	72.4
LIFDC	266 048	314 378	2.1	1.5	231 634	271 906	2.0	1.5	8 295	12 799	4.3	4.0	61.8	62.2
LDC	15 865	22 103	2.8	3.1	14 243	20 520	2.7	3.4	82	88	5.2	0.6	20.8	23.3
NFDC	48 521	57 456	1.9	1.5	43 711	53 202	1.8	1.8	1 298	1 250	1.4	-0.3	106.6	105.3

1/ 1998-2000 Average

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Table 2.6 - Wheat: trade projections

	IMPORTS				EXPORTS				IMPORT SHARE		EXPORT SHARE	
	Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010	Base Period ^{1/}	Projection 2010
	(. . . 000 tonnes . . .) (. . . % per year . . .)				(. . . 000 tonnes . . .) (. . . % per year . . .)				(. . . . %)		(. . . . %)	
WORLD	104 462	129 016	0.0	1.9	104 462	128 407	1.5	1.9	100.0	100.0	100.0	100.0
DEVELOPING	80 499	106 488	0.6	2.6	16 184	17 793	6.7	0.9	77.1	82.5	15.5	13.9
AFRICA	24 843	29 485	1.8	1.6	147	132	-5.7	-0.9	23.8	22.9	0.1	0.1
NORTH AFRICA	16 409	18 426	0.3	1.1			0.0	0.0	15.7	14.3	0.0	0.0
Algeria	4 863	5 321	0.2	0.8			0.0	0.0	4.7	4.1	0.0	0.0
Egypt	6 394	7 168	-1.6	1.0			0.0	0.0	6.1	5.6	0.0	0.0
Morocco	2 808	3 338	6.3	1.6			0.0	0.0	2.7	2.6	0.0	0.0
SUB-SAHARA	8 433	11 059	5.4	2.5	147	132	-5.7	-0.9	8.1	8.6	0.1	0.1
Nigeria	1 674	2 140	16.0	2.3			0.0	0.0	1.6	1.7	0.0	0.0
Sudan	1 161	1 371	8.5	1.5			0.0	0.0	1.1	1.1	0.0	0.0
LATIN AMER. & CARIB.	18 631	21 744	6.4	1.4	10 552	13 768	7.3	2.4	17.8	16.9	10.1	10.7
CENTRAL AMERICA	3 944	4 599	9.8	1.4	417	189	13.2	-6.9	3.8	3.6	0.4	0.1
Mexico	2 617	2 940	14.3	1.1	415	187	13.2	-7.0	2.5	2.3	0.4	0.1
CARIBBEAN	2 069	2 534	-1.2	1.9	80	80	30.8	0.0	2.0	2.0	0.1	0.1
SOUTH AMERICA	12 619	14 611	7.5	1.3	10 055	13 499	7.1	2.7	12.1	11.3	9.6	10.5
Argentina			0.0	0.0	9 864	13 278	7.6	2.7	0.0	0.0	9.4	10.3
Brazil	7 238	7 953	11.7	0.9	2	3	-5.9	0.8	6.9	6.2	0.0	0.0
ASIA	36 717	54 882	-1.9	3.7	5 485	3 893	6.3	-3.1	35.1	42.5	5.3	3.0
NEAR EAST	15 129	23 097	0.9	3.9	3 462	1 527	2.8	-7.2	14.5	17.9	3.3	1.2
Iran Islamic Rep.	5 469	6 062	1.9	0.9			0.0	0.0	5.2	4.7	0.0	0.0
Saudi Arabia	48	875	-11.8	30.3			0.0	0.0	0.0	0.7	0.0	0.0
Turkey	1 292	3 491	-1.7	9.5	2 099	687	10.9	-9.7	1.2	2.7	2.0	0.5
SOUTH ASIA	5 504	9 707	0.1	5.3	1 341	1 704	19.0	2.2	5.3	7.5	1.3	1.3
Bangladesh	1 714	2 136	-0.5	2.0			0.0	0.0	1.6	1.7	0.0	0.0
India	1 060	2 271	2.0	7.2	911	1 704	15.2	5.9	1.0	1.8	0.9	1.3
Pakistan	1 741	3 819	-0.9	7.4	431		0.0	-65.0	1.7	3.0	0.4	0.0
SOUTH EAST ASIA	16 084	22 078	-4.5	2.9	682	662	21.1	-0.3	15.4	17.1	0.7	0.5
China	2 107	4 304	-18.4	6.7	452	479	51.0	0.5	2.0	3.3	0.4	0.4
Taiwan Province	1 044	934	0.8	-1.0	-	-	0.0	0.0	1.0	0.7	-	-
Indonesia	3 586	5 013	5.6	3.1			0.0	0.0	3.4	3.9	0.0	0.0
Korea Rep.	3 900	4 046	1.3	0.3	47		0.0	-65.0	3.7	3.1	0.0	0.0
Philippines	2 730	3 772	6.1	3.0			0.0	0.0	2.6	2.9	0.0	0.0
OCEANIA	309	377	2.4	1.8			0.0	0.0	0.3	0.3	0.0	0.0
DEVELOPED	14 646	16 479	2.3	1.1	77 699	91 333	-0.1	1.5	14.0	12.8	74.4	71.1
NORTH AMERICA	2 672	2 679	12.5	0.0	45 293	49 283	-0.3	0.8	2.6	2.1	43.4	38.4
Canada	52	53	0.0	0.2	16 487	16 929	0.4	0.2	0.0	0.0	15.8	13.2
United States	2 620	2 626	12.3	0.0	28 806	32 354	-0.7	1.1	2.5	2.0	27.6	25.2
WESTERN EUROPE	3 811	5 017	1.6	2.5	15 255	24 403	-2.9	4.4	3.6	3.9	14.6	19.0
EU (15)	3 171	4 399	1.8	3.0	15 252	24 400	-2.9	4.4	3.0	3.4	14.6	19.0
OCEANIA	193	241	0.6	2.0	16 644	17 122	4.7	0.3	0.2	0.2	15.9	13.3
Australia			0.0	0.0	16 641	17 120	4.7	0.3	0.0	0.0	15.9	13.3
OTHER	7 969	8 541	0.7	0.6	507	525	-4.7	0.3	7.6	6.6	0.5	0.4
Japan	5 876	5 923	-0.4	0.1	425	439	1.2	0.3	5.6	4.6	0.4	0.3
South Africa	548	779	-0.5	3.3	82	86	-15.4	0.4	0.5	0.6	0.1	0.1
									0.0	0.0	0.0	0.0
TRANSITIONAL	9 317	6 049	-5.8	-3.9	10 579	19 281	13.4	5.6	8.9	4.7	10.1	15.0
EASTERN EUROPE	1 904	1 098	-1.3	-4.9	3 228	5 417	1.9	4.8	1.8	0.9	3.1	4.2
Bulgaria	115	115	-0.5	0.1	726	1 485	5.7	6.7	0.1	0.1	0.7	1.2
Hungary			0.0	0.0	1 084	1 729	-2.3	4.3	0.0	0.0	1.0	1.3
Poland	478	398	-10.6	-1.7	198	200	11.5	0.1	0.5	0.3	0.2	0.2
Romania	265	99	2.8	-8.6	378	1 051	11.8	9.7	0.3	0.1	0.4	0.8
CIS	7 193	4 727	0.0	-3.7	7 089	13 719	0.0	6.2	6.9	3.7	6.8	10.7
Kazakhstan	25		0.0	-65.0	3 894	4 949	0.0	2.2	0.0	0.0	3.7	3.9
Russian Fed.	2 951	661	0.0	-12.7	908	2 494	0.0	9.6	2.8	0.5	0.9	1.9
Ukraine	424	436	0.0	0.2	2 123	6 058	0.0	10.0	0.4	0.3	2.0	4.7
Uzbekistan	558	705	0.0	2.2	5	5	0.0	0.4	0.5	0.5	0.0	0.0
BALTIC	220	223	0.0	0.1	262	146	0.0	-5.2	0.2	0.2	0.3	0.1
LIFDC	38 828	53 565	-0.7	3.0	2 468	2 914	8.3	1.5	37.2	41.5	2.4	2.3
LDC	9 419	14 042	3.5	3.7	456	225	12.2	-6.2	9.0	10.9	0.4	0.2
NFDC	18 574	23 540	0.3	2.2	487	56	47.0	-17.8	17.8	18.2	0.5	0.0

^{1/} 1998-2000 Average

Rice

Production

Global rice production is projected to rise at less than 1 percent per year in the current decade, down from 1.6 percent in the 1990s. As a result, by 2010 world production would reach 440 million tonnes, in milled equivalent, up from 400 million tonnes in the 1998–2000 base period. Virtually all the expansion would stem from an intensification of production, with hardly any increase in area anticipated. At the same time, the loss of yield momentum observed in the previous two decades is expected to persist in the medium term.

Such a growth pattern is expected to dominate in Asia where pressure on labour, land and water resources from other growth sectors will limit the scope for an expansion of rice cultivation. In South America, a reduction in government support might stall an expansion in plantings in the next decade. At the same time, the modernization of the sector should sustain a dynamic expansion in yields in the region. Unlike in the other regions, production growth in Africa is expected to rely almost equally on area and yield gains. Little change in production is projected for the developed countries, while the economies in transition might experience dynamic growth, although not sufficient to allow a full recovery to levels of the early 1990s.

Consumption

Global demand for rice in the next decade is expected to expand at slightly more than one percent per year, down from 1.7 percent in the 1990s. By 2010, total rice utilization in the developing countries is projected to reach 424 million tonnes, 46 million tonnes more than the 1998–2000 average, while the overall increase would amount to about 3 million tonnes for the combined total of the developed countries and the economies in transition. Average per capita food consumption is anticipated to grow marginally from the base period at 58.2 kg per person. For the developing country group, the rise in population should be the determining factor underpinning rice demand in the next decade, as per capita consumption could dip somewhat. By contrast, growth in per capita intake should sustain the increase in consumption in the transition economies.

Although the utilization of rice for feed increased in recent years, rice remains essentially a grain for human consumption and a staple food for about half of the world population. Worldwide, per capita rice food consumption is projected to grow marginally between the base period and 2010, although a slight contraction is foreseen in the developing countries reflecting mainly changes in the dietary patterns in Southeast Asia. By contrast, per capita consumption is likely to rise in Africa, Latin American and Caribbean (LAC) countries and among the developed and transition countries.

Trade

World rice trade is projected to expand by about 2.2 percent per year to 31.4 million tonnes in 2010 compared to the average of 24.6 million tonnes in the base period. Asian countries are expected to remain the main destination, absorbing 46 percent of the projected volume or 14.6 million tonnes, about 2 million tonnes more than in 1998–2000. Shipments to the Near East are expected to rise by less than 2 percent per year to reach 5.4 million tonnes, much slower than the 5 percent annual growth experienced in the 1990s. Imports into Africa are projected to rise by 2.5 million tonnes, with large increases expected in Cote d'Ivoire, Madagascar, Nigeria and Senegal. By contrast, imports by LAC are envisaged to change little, since smaller shipments to Brazil would offset some increases in Mexico, Haiti and Colombia. Together, the developed countries and economies in transition are anticipated to import about 5.6 million tonnes in 2010, 2.1 million tonnes more than in the base period.

By 2010, Asian countries are projected to supply more than three quarters of the international rice market, with the top two exporters, Thailand and Viet Nam, expanding both volumes and shares in total trade. Exports from Cambodia, the Lao People's Democratic Republic and Myanmar could also surge, as they take advantage of the opening of markets under preferential schemes, such as the EU "Everything but Arms". On the other hand, China could experience reductions as production growth stalls. Exports from both Pakistan and India are anticipated to hover around 2 million tonnes, each, not too different from the base period, with the bulk of the

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shipments likely to be the high-priced Basmati rice. In the other regions, Argentina, Egypt and Uruguay are anticipated to increase their exports substantially. Developed countries' share of the rice market is projected to shrink from 17 percent in the base period to 12 percent in 2010, as deliveries from the United States fall by the end of the decade. Exports from Australia, however, are projected to rise to some extent.

Issues and uncertainties

In the past three years, China has embarked in new cereal policies that have triggered a strong contraction in production, resulting in a sizeable stock drawdown to bridge the gap with consumption. The Government is not expected to maintain this production policy in the medium term. However, if it did, the country would have to resort massively to imports, which would have a very strong impact on the world rice economy. The opening of a 5.3 million tonne tariff quota by the country in 2004, as part of China's WTO accession commitments, would facilitate access to the country's rice domestic market, but the requirement might be much larger, of

the order of the 12 million tonne average drawdown of stocks, estimated to have been released by the country between 1999 and 2003. While purchases of this magnitude would boost the volume of international trade, they would also make international prices soar, with indirect effects on the rest of the world production, consumption, trade and stocks as well as on world food security.

Another area of uncertainty that might have a huge bearing on the rice economy is linked to the behaviour of the African countries. The region provided much momentum to the international rice market, since imports to the continent more than doubled between 1995 and 2002, accounting in the latter year for almost 30 percent of overall trade. Governments in the region have shown growing concern over the size of their rice deliveries and foreign exchange outflow. Several of them (in particular Nigeria, the leading rice importer in the region) already took action in 2003 to slow the inflow of rice. A reversal of African countries' relatively open trade policies for rice would have strong depressing effects on international prices, volume of trade, and on the geographical pattern of production.

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Table 2.7. Rice: production projections

	AREA				YIELD				PRODUCTION ^{2/}			
	Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010	
	(. . . 000 hectares . . .) (. . % per year . . .)				(. . . tonnes/ha . . .) (. . % per year . . .)				(. . . 000 tonnes . . .) (. . % per year . . .)			
WORLD	153 965	152 794	0.4	-0.1	2.6	2.9	1.2	1.0	399 555	440 315	1.6	0.9
DEVELOPING	149 887	148 970	0.5	-0.1	2.5	2.8	1.2	1.0	381 694	421 898	1.7	0.9
AFRICA	7 494	8 694	2.2	1.4	1.5	1.7	1.4	1.4	11 080	15 011	3.6	2.8
NORTH AFRICA	617	640	4.3	0.3	6.1	7.5	3.0	1.9	3 765	4 817	7.4	2.3
SUB SAHARA	6 876	8 054	2.0	1.4	1.1	1.3	0.1	1.6	7 315	10 194	2.1	3.1
Côte d'Ivoire	550	676	0.1	1.9	1.0	1.4	3.1	3.2	543	947	3.2	5.2
Ghana	117	180	7.0	4.0	1.1	1.6	1.8	3.2	133	290	8.9	7.4
Madagascar	1 207	1 353	0.6	1.0	1.4	1.5	0.0	0.9	1 658	2 052	0.5	2.0
Mali	321	445	4.3	3.0	1.5	2.0	4.7	2.4	496	891	9.2	5.5
Mozambique	167	210	14.1	2.1	0.7	1.1	-1.2	3.8	118	224	12.7	6.0
Nigeria	2 081	2 253	4.8	0.7	0.9	1.0	-2.4	0.7	1 970	2 304	2.3	1.4
Senegal	81	105	0.5	2.4	1.5	1.7	1.4	1.3	123	183	1.9	3.7
LATIN AMER. & CARIB.	6 298	6 502	-1.6	0.3	2.3	2.9	3.5	2.1	14 692	19 060	1.9	2.4
CENTRAL AMERICA	354	393	-0.6	0.9	2.5	3.0	2.0	1.5	888	1 163	1.3	2.5
Mexico	89	92	-4.1	0.3	3.1	3.4	2.6	1.0	274	314	-1.6	1.3
CARIBBEAN	293	299	-0.2	0.2	2.2	2.7	-0.5	1.9	644	809	-0.7	2.1
Cuba	116	112	-2.8	-0.3	1.8	2.6	-1.4	3.0	212	286	-4.2	2.8
Haiti	51	46	3.0	-1.1	1.4	1.5	-2.9	0.4	74	68	0.0	-0.7
SOUTH AMERICA	5 642	5 810	-1.7	0.3	2.3	2.9	3.9	2.1	13 161	17 089	2.1	2.4
Argentina	230	364	7.9	4.3	3.5	4.0	2.7	1.1	810	1 442	10.8	5.4
Brazil	3 591	3 323	-3.6	-0.7	2.0	2.5	3.9	2.4	7 028	8 444	0.2	1.7
Colombia	445	484	0.1	0.8	2.9	3.4	0.5	1.7	1 274	1 667	0.7	2.5
Ecuador	356	453	2.5	2.2	2.0	2.0	0.8	0.4	700	927	3.3	2.6
Uruguay	193	200	8.3	0.4	4.2	4.8	2.0	1.2	814	970	10.4	1.6
ASIA	136 095	133 767	0.5	-0.2	2.6	2.9	1.1	0.9	355 908	387 814	1.6	0.8
NEAR EAST	860	1 007	0.7	1.4	2.3	2.5	1.1	0.9	1 979	2 556	1.7	2.4
Iran Islamic Rep.	579	637	1.4	0.9	2.6	2.9	1.1	0.9	1 489	1 816	2.6	1.8
Iraq	68	115	0.1	4.9	1.4	1.7	-2.7	2.0	92	194	-2.6	7.0
Saudi Arabia			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
Turkey	64	80	1.6	2.1	3.2	3.6	0.4	1.2	201	289	2.0	3.3
SOUTH ASIA	60 069	59 512	0.6	-0.1	2.0	2.2	1.5	1.2	118 817	133 511	2.1	1.1
Bangladesh	10 541	10 946	0.2	0.3	2.2	2.6	2.7	1.7	22 686	28 368	2.9	2.1
India	44 712	43 968	0.6	-0.2	1.9	2.1	1.2	0.9	86 810	94 466	1.8	0.8
Pakistan	2 438	2 226	1.6	-0.8	2.0	2.5	2.6	2.0	4 877	5 551	4.2	1.2
Sri Lanka	825	752	1.0	-0.8	2.3	2.7	0.7	1.5	1 906	2 049	1.7	0.7
SOUTH EAST ASIA	75 165	73 247	0.4	-0.2	3.1	3.4	1.0	0.9	235 112	251 747	1.4	0.6
Cambodia	1 981	2 335	2.0	1.5	1.2	1.5	2.6	1.7	2 393	3 409	4.6	3.3
China (mainland)	30 820	27 827	-0.5	-0.9	4.3	4.8	1.6	1.0	133 600	134 785	1.1	0.1
Indonesia	11 824	11 878	1.3	0.0	2.7	3.0	-0.6	0.9	31 913	35 442	0.7	1.0
Korea DPR	563	629	-3.0	1.0	2.4	3.5	-3.8	3.6	1 341	2 204	-6.7	4.6
Korea Rep.	1 066	896	-1.6	-1.6	4.9	5.3	0.5	0.7	5 217	4 720	-1.1	-0.9
Malaysia	689	685	0.2	-0.1	1.9	2.1	1.2	0.9	1 320	1 447	1.4	0.8
Myanmar	5 991	6 747	2.5	1.1	2.1	2.1	1.1	0.1	12 408	14 202	3.6	1.2
Philippines	3 885	4 311	1.3	1.0	2.0	2.2	0.9	0.9	7 583	9 271	2.2	1.8
Thailand	9 748	9 153	0.2	-0.6	1.6	2.1	1.9	2.2	16 060	19 168	2.1	1.6
Viet Nam	7 561	7 664	2.3	0.1	2.7	3.2	2.9	1.3	20 693	24 148	5.2	1.4
OCEANIA	10	8	-3.1	-2.0	1.4	1.6	-0.8	1.1	14	13	-3.8	-0.9
DEVELOPED	3 653	3 381	-0.1	-0.7	4.7	5.1	0.4	0.8	17 056	17 284	0.3	0.1
NORTH AMERICA	1 323	1 267	1.6	-0.4	4.6	5.0	0.2	0.7	6 081	6 277	1.7	0.3
United States	1 323	1 267	1.6	-0.4	4.6	5.0	0.2	0.7	6 081	6 277	1.7	0.3
WESTERN EUROPE	400	340	1.3	-1.5	4.5	5.2	0.6	1.4	1 790	1 765	1.9	-0.1
EU(15)	400	340	1.3	-1.5	4.5	5.2	0.6	1.4	1 790	1 765	1.9	-0.1
OCEANIA	142	154	3.3	0.7	5.9	7.1	1.3	1.6	841	1 086	4.6	2.3
Australia	142	154	3.3	0.7	5.9	7.1	1.3	1.6	841	1 086	4.6	2.3
OTHER	1 787	1 620	-1.6	-0.9	4.7	5.0	0.5	0.7	8 345	8 156	-1.1	-0.2
Japan	1 786	1 619	-1.6	-0.9	4.7	5.0	0.5	0.7	8 343	8 154	-1.1	-0.2
South Africa	1	1	0.0	0.1	2.0	2.1	0.0	0.4	2	2	0.0	0.5
TRANSITIONAL	425	442	-5.3	0.4	1.9	2.6	-2.0	2.8	805	1 132	-7.2	3.2
EASTERN EUROPE	14	17	-16.5	1.8	2.4	3.3	3.8	3.0	33	55	-13.3	4.9
CIS	411	426	0.0	0.3	1.9	2.5	0.0	2.8	772	1 077	0.0	3.1
Kazakhstan	72	80	0.0	1.0	2.0	2.8	0.0	3.0	144	223	0.0	4.0
Russian Fed.	155	126	0.0	-1.9	2.1	3.2	0.0	4.1	321	404	0.0	2.1
Uzbekistan	121	149	0.0	1.9	1.7	2.0	0.0	1.4	205	295	0.0	3.4
BALTIC			0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0
LIFDC	117 815	116 567	0.4	-0.1	2.6	2.9	1.0	0.9	308 790	336 557	1.5	0.8
LDC	24 955	27 482	1.0	0.9	1.8	2.1	1.9	1.2	45 953	57 441	3.0	2.0
NFDC	5 202	5 262	1.5	0.1	2.6	3.3	2.8	2.1	13 533	17 111	4.4	2.2

1/ 1998-2000 Average
2/ Milled equivalent

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Table 2.9. Rice (milled basis): trade projections

	IMPORTS				EXPORTS				IMPORT SHARE		EXPORT SHARE	
	Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010	Base Period ^{1/}	Projection 2010
	(... 000 tonnes ...)		(... % per year ...)		(... 000 tonnes ...)		(... % per year ...)		(... % ...)		(... % ...)	
WORLD	24 640	31 421	7.2	2.2	24 640	31 343	7.6	2.2	100.0	100.0	100.0	100.0
DEVELOPING	21 104	25 772	7.6	1.8	20 469	27 400	9.0	2.7	85.6	82.0	83.1	87.4
AFRICA	5 463	8 025	5.7	3.6	515	914	17.2	5.4	22.2	25.5	2.1	2.9
NORTH AFRICA	215	292	-1.4	2.8	501	884	19.0	5.3	0.9	0.9	2.0	2.8
SUB SAHARA	5 248	7 733	6.1	3.6	14	30	-1.8	7.2	21.3	24.6	0.1	0.1
Côte d'Ivoire	873	909	9.8	0.4			0.0	0.0	3.5	2.9	0.0	0.0
Ghana	230	268	5.9	1.4			0.0	0.0	0.9	0.9	0.0	0.0
Madagascar	167	433	9.4	9.1			0.0	0.0	0.7	1.4	0.0	0.0
Mali	44		-4.4	0.0		1	0.0	0.0	0.2	0.0	0.0	0.0
Mozambique	147	207	7.0	3.2			0.0	0.0	0.6	0.7	0.0	0.0
Nigeria	1 209	2 076	15.6	5.0			0.0	0.0	4.9	6.6	0.0	0.0
Senegal	580	760	3.7	2.5			0.0	0.0	2.4	2.4	0.0	0.0
LATIN AMER. & CARIB..	2 830	2 792	8.3	-0.1	1 692	2 377	11.4	3.1	11.5	8.9	6.9	7.6
CENTRAL AMERICA	653	932	10.2	3.3	14	14	22.9	0.0	2.6	3.0	0.1	0.0
Mexico	424	574	10.6	2.8	4	4	45.6	0.0	1.7	1.8	0.0	0.0
CARIBBEAN	778	917	4.7	1.5	1	1	25.9	0.0	3.2	2.9	0.0	0.0
Cuba	427	405	5.2	-0.5			0.0	0.0	1.7	1.3	0.0	0.0
Haiti	209	352	7.4	4.8			0.0	0.0	0.8	1.1	0.0	0.0
SOUTH AMERICA	1 399	943	10.2	-3.5	1 677	2 363	11.3	3.2	5.7	3.0	6.8	7.5
Argentina	15	16	36.0	1.0	576	1 062	25.4	5.7	0.1	0.1	2.3	3.4
Brazil	953	587	15.0	-4.3	28	28	12.5	0.0	3.9	1.9	0.1	0.1
Colombia	83	119	0.0	3.3			0.0	0.0	0.3	0.4	0.0	0.0
Ecuador	37		4.3	-67.5	31	72	-3.8	8.0	0.2	0.0	0.1	0.2
Uruguay	1	1	0.0	0.7	722	871	11.2	1.7	0.0	0.0	2.9	2.8
ASIA	12 535	14 571	8.6	1.4	18 262	24 108	8.7	2.6	50.9	46.4	74.1	76.9
NEAR EAST	4 487	5 448	4.6	1.8	2	2	-13.6	0.0	18.2	17.3	0.0	0.0
Iran Islamic Rep.	1 011	1 182	2.4	1.4			0.0	0.0	4.1	3.8	0.0	0.0
Iraq	1 025	1 050	8.1	0.2			0.0	0.0	4.2	3.3	0.0	0.0
Saudi Arabia	777	907	2.5	1.4			0.0	0.0	3.2	2.9	0.0	0.0
Turkey	294	373	4.5	2.2	2	2	-6.2	0.0	1.2	1.2	0.0	0.0
SOUTH ASIA	1 108	1 256	6.6	1.1	4 117	4 365	11.0	0.5	4.5	4.0	16.7	13.9
Bangladesh	853	821	20.6	-0.3			0.0	0.0	3.5	2.6	0.0	0.0
India	32	33	-17.3	0.3	1 928	2 242	14.1	1.4	0.1	0.1	7.8	7.2
Pakistan			0.0	0.0	2 188	2 121	8.9	-0.3	0.0	0.0	8.9	6.8
Sri Lanka	129	154	-5.0	1.6	2	2	0.0	0.0	0.5	0.5	0.0	0.0
SOUTH EAST ASIA	6 940	7 867	12.9	1.1	14 143	19 742	8.1	3.1	28.2	25.0	57.4	63.0
Cambodia	29		-0.1	-63.2	62	492	0.0	20.7	0.1	0.0	0.3	1.6
China (mainland)	219	1 517	-7.2	19.3	2 583	1 467	19.7	-5.0	0.9	4.8	10.5	4.7
Indonesia	3 847	2 816	36.9	-2.8			0.0	0.0	15.6	9.0	0.0	0.0
Korea DPR	498	599	22.7	1.7			0.0	0.0	2.0	1.9	0.0	0.0
Korea Rep.	106	211	50.6	6.5			0.0	0.0	0.4	0.7	0.0	0.0
Malaysia	602	770	5.9	2.3			0.0	0.0	2.4	2.4	0.0	0.0
Myanmar			0.0	0.0	275	2 215	6.7	20.9	0.0	0.0	1.1	7.1
Philippines	806	982	10.1	1.8			0.0	0.0	3.3	3.1	0.0	0.0
Thailand			0.0	0.1	7 149	9 644	4.8	2.8	0.0	0.0	29.0	30.8
Viet Nam	3	3	-18.1	0.4	3 940	5 811	11.7	3.6	0.0	0.0	16.0	18.5
OCEANIA	276	385	3.2	3.1			0.0	0.0	1.1	1.2	0.0	0.0
DEVELOPED	2 566	4 017	5.5	4.2	4 125	3 853	2.8	-0.6	10.4	12.8	16.7	12.3
NORTH AMERICA	605	729	7.0	1.7	2 797	2 410	1.4	-1.3	2.5	2.3	11.4	7.7
United States	349	365	8.9	0.4	2 797	2 410	1.4	-1.3	1.4	1.2	11.4	7.7
WESTERN EUROPE	662	1 515	-1.5	7.8	205	205	-4.8	0.0	2.7	4.8	0.8	0.7
EU(15)	588	1 409	-1.8	8.3	205	205	-4.8	0.0	2.4	4.5	0.8	0.7
OCEANIA	74	100	6.8	2.7	634	750	5.5	1.5	0.3	0.3	2.6	2.4
Australia	47	52	6.3	0.9	634	750	5.5	1.5	0.2	0.2	2.6	2.4
OTHER	1 225	1 674	12.6	2.9	489	488	0.0	0.0	5.0	5.3	2.0	1.6
Japan	637	856	49.4	2.7	489	488	0.0	0.0	2.6	2.7	2.0	1.6
South Africa	504	714	5.5	3.2			0.0	0.0	2.0	2.3	0.0	0.0
TRANSITIONAL	971	1 632	3.2	4.8	46	90	5.2	6.2	3.9	5.2	0.2	0.3
EASTERN EUROPE	382	499	4.3	2.5	8	8	4.8	0.0	1.5	1.6	0.0	0.0
CIS	569	1 111	0.0	6.3	36	79	0.0	7.5	2.3	3.5	0.1	0.3
Kazakhstan	3	3	0.0	0.6	15	56	0.0	12.8	0.0	0.0	0.1	0.2
Russian Fed.	403	640	0.0	4.3	16	16	0.0	0.0	1.6	2.0	0.1	0.1
Uzbekistan	25	145	0.0	17.5	3	3	0.0	0.0	0.1	0.5	0.0	0.0
BALTIC	20	22	0.0	0.8	3	3	0.0	0.0	0.1	0.1	0.0	0.0
LIFDC	12 948	16 661	9.8	2.3	7 288	7 358	13.6	0.1	52.5	53.0	29.6	23.5
LDC	3 504	5 174	6.7	3.6	351	2 845	8.8	21.0	14.2	16.5	1.4	9.1
NFDC	2 555	2 715	4.1	0.6	2 723	3 077	10.2	1.1	10.4	8.6	11.1	9.8

^{1/} 1998-2000 Average

Basic food and feed crops

Coarse grains

Introduction

The projections for coarse grains consist of the aggregation of three separate projections: maize; sorghum and millet; and other coarse grains including barley, oats, rye and minor grains. In aggregate, international trade in coarse grains is projected to increase by 15 percent by 2010, or about 15 million tonnes, compared to the average in the base period (1998–2000). This compares with virtually no growth in global trade during the previous decade, due largely to the shift in several countries from net importers in the 1980s to net exporters in the 1990s, primarily among the transition economies (Eastern Europe and the Commonwealth of Independent States [CIS]), a pattern that is expected to persist during the projection period. Almost all the projected growth in import demand is expected to come from the developing countries, primarily for feed use but also for food, although per capita food consumption of coarse grains is projected to decline slightly. Global coarse grain stocks are projected to contract compared to the base period, in line with the ongoing market and trade liberalization being undertaken by a number of countries.

Production

Global coarse grains production is expected to expand by 13 percent this decade, similar to the 1990s growth rate, which is expected to be attained through a combination of increases in average yields (up 7 percent) and area expansion (up 5 percent). In the case of coarse grain area, the projected growth rate shows a recovery from the negative growth recorded in the previous decade. In aggregate, the developed countries' projected coarse grain area is maintained at the level of the base period, reversing a decline during the previous decade when policies in some of the major coarse grain exporters restricted area. Land for coarse grain production also shrunk in the countries in transition during the previous decade, but is expected to recover slightly by 2010. Most of the global coarse grain area expansion, therefore, is expected to come from developing countries, especially Africa (particularly Nigeria, Sudan) and in the Latin

Americans and Caribbean (LAC) region (particularly Brazil).

With respect to the developing countries, production prospects continue to be subject to the pressure of shrinking supplies of arable land and the growing scarcity of water. In particular, developing countries in Asia are likely to depend more on productivity gains in the future than on the growth in the land base, which is assumed to face more constraints (water, urbanization) than in other parts of the developing world. Productivity improvements are assumed to come largely from the widening adaptation of current technologies among developing country producers and from the revival of productivity in the CIS and Eastern European countries. Yields in the latter two groups actually fell following the political and economic reforms in the former Soviet Union and those countries within its sphere of influence.

Consumption

In general, growth in the consumption of coarse grains as food is projected to slow, except in parts of Africa where they are an integral part of local diets, including maize, sorghum, millets, and several traditional grains grown in these areas.¹ The strongest growth in demand is expected for feed. Other uses of coarse grains, especially for fuel additives and alcohol-based beverages, are also likely to see relatively strong expansion this decade.

About two-thirds of the total world use of coarse grains is for feed, which is anticipated to grow by 13 percent over the projection period. The combination of feed demand in the countries in transition, in particular for maize and barley, and continued strong growth among developing countries, although at a slower rate than during the 1990s, is expected to account for most of the global increase in coarse grain feed use this decade. Among developing countries, projected increases in economic growth and urbanization are expected to continue to promote shifts in dietary preferences toward protein-based diets, thus leading to greater demand for grain feed. In the transition economies, which experienced

¹ Four-fifths of coarse grain utilization is for direct human consumption in the sub-Saharan region.

sharp declines in the demand for grain during the previous decade, feed use is anticipated to recover this decade. The growth in feed demand should continue to remain moderately strong in the developed countries, only slightly below that of the previous decade.

Global food consumption of coarse grains is projected to continue to expand, albeit due entirely to population growth, as average per capita food consumption is expected to continue to decline from 29 kilograms in the base period to 28 kilograms by 2010. The largest declines in per capita food consumption are among developing countries, primarily in Asia and LAC. In Africa, developing countries are expected to only slightly reduce their individual annual intake of 75 kilograms. Rising incomes and growing urbanization are expected to contribute to the shift in demand away from the food consumption of coarse grains, especially maize, sorghum and millets, towards higher protein and more convenient, easier-to-prepare foods. The demand for other uses of coarse grains, especially for industrial uses and as alternatives to existing products, is expected to remain relatively strong. Coarse grains are used to make starch, beer and cane sugar alternatives, as well as in the production of adhesives and alcohol for petroleum additives.

Trade

Global trade in coarse grains is projected to reach about 119 million tonnes compared to an average of 104 million tonnes in the base period. The bulk of the increase is accounted for by maize, up 11 million tonnes to 85 million tonnes in 2010. Developing countries as a group are expected to increase their imports of coarse grains by 10 million tonnes, mostly in Asia, to meet an expected strong demand for feed. Total imports among the transition economies would remain unchanged from the base period average of 4.3 million tonnes.

Among the major coarse grain exporting regions, North America could expand exports by 14.5 million tonnes to 74 million tonnes, after very little growth during the previous decade. South American exports are also projected to grow by some 38 percent during the current decade, resulting in a growing share of the world market. By contrast, exports

from Western Europe are projected to decline, reversing an expansion during the 1990s. Coarse grain exports from the countries in transition are projected to continue to expand, reaching 8 million tonnes by 2010, improving their net export position.

The United States will likely expand its majority share of the global coarse grain market from 54 percent in the base period to 58 percent in 2010, primarily in maize. Other countries expected to significantly increase their net export positions include Australia, Brazil, Canada, Hungary, Kazakhstan, the Russian Federation, South Africa and Ukraine. Most of the United States' export gain will likely come from China, which is projected to become a net importer of maize compared to its current large net export position (13 million tonnes in 2002/2003). So far, the accession of China to the WTO has not been binding on its maize exports nor has it promoted imports under its TRQ commitment (7.2 million tonnes by 2004). In the longer run, the ability of domestic production to meet growing domestic demand, in particular for feed, will primarily determine China's net trade position.

Southeast Asia will likely increase its share of the global import market to 23 percent, due mostly to China's changing net trade position, while other major individual country importers are expected to maintain their historic shares, including Mexico (10 percent), Saudi Arabia (6 percent) and Egypt (4 percent). Japan, the world's largest market for coarse grains (20 percent), could see slower import demand due to its relatively slow economic growth predicted for the projection period (compared to other OECD countries).

Stocks and prices

End-of-season coarse grain stocks are anticipated to further shrink as governments seek to disengage from direct production and market support and to limit their financial exposure by holding fewer surplus stocks. By 2010, global coarse grain carryover stocks, as a percent of total utilization, could fall to 22 percent, compared to 28 percent in the base period. While not as critical for global food security as wheat and rice inventories, coarse grains are still considered in many countries, especially some of the most food-insecure, as staple food. However, with more countries

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expected to emerge as net exporters of coarse grains by 2010, there could be some cushioning of the impact of lower stocks on global food security by diversifying exportable supplies.

Real coarse grain prices are expected to remain close to the long-term downward trend by 2010. Deflated international maize prices are projected to be about 1 percent above the base period price by 2010, while for sorghum/millet and other coarse grains, prices could be 1 - 2 percent below the average level in the base period. In nominal terms, international maize price projections for 2010 would be a substantial improvement over the depressed prices registered during the base period.

Issues and uncertainties

Coarse grain production in the EU and some transition countries could be constrained as a result of the CAP Reform. Based on the latest analysis provided by the European Commission (EC), area devoted to coarse grains in the EU (15) could be reduced under the Reform proposals, compared to a baseline projection to 2009/10, from a decline from about one percent for barley to the heaviest loss for rye at 9 percent¹. Rye intervention would be abolished under the CAP Reform. European Commission (2003a) As a result of the CAP Reform, EU (15) coarse grain production was projected to fall by about 2 percent by 2009/10, compared to the baseline. Even when the projections were done for the expanded EU (25), coarse grain area would still be smaller, compared to the baseline, except for barley, which is the most important grain crop among the 10 new EU members.

EU coarse grain trade could diverge from the baseline projections with the expansion of the EU. Many of the largest coarse grain exporters in the region are among the new members and they will be affected by CAP reforms, and by any decisions taken on export subsidies during the current round of the WTO negotiations. While the final schedule of export subsidy reductions has yet to be decided, barley will be

the coarse grain most affected according to the EU Commission. In addition, if the current strength of the Euro is maintained throughout the medium term, this could put upward pressure on EU export prices of coarse grains.

In terms of global coarse grain trade, China's role will be the key to future developments. China has become one of the world's largest coarse grain exporters, especially of maize. In spite of commitments under its accession to the WTO, coarse grain imports have remained within 2 - 3 million tonnes in recent years. The current assumption is that the country cannot continue to draw down inventories to meet domestic demand and exports, and will have to import larger volumes in the medium term. However, the actual volume and timing of these imports are subject to much uncertainty and speculation.

As for the volume of imports, it is unlikely that China's coarse grain imports would exceed 8 million tonnes, about 5 percent of the projected domestic consumption, which conforms to the 95 percent self-sufficiency goal of the Government. Just when China will revert to a net coarse grain importer is more difficult to project, although some import activity could occur after it re-negotiates its TRQ commitments in 2005.

The adoption of GM seeds is not anticipated to make a substantial difference in global coarse grain production over the projection period. The bulk of the GM traits have been designed to reduce production costs, primarily through insect resistance and herbicide tolerance traits, rather than for yield enhancing properties, although there is some evidence that average yields have improved with the adoption of GM maize. Some 12 million ha were planted to GM maize in 2002, about 9 percent of the global total. GM maize has been primarily adopted by commercial farmers in the United States and Argentina, the two largest exporters. However, the ongoing controversy related to the acceptance of food and feed produced from GM crops will likely constrain their adoption in the medium term.

¹ Rye intervention would be abolished under the CAP Reform. See: European Commission, Directorate-General for Agriculture, "Reform of the common agricultural policy: A long-term perspective for sustainable agriculture - Impact analysis", March 2003.

Table 2.10. Coarse grains: production projections

	AREA				YIELD				PRODUCTION			
	Base	Projection	Growth Rates		Base	Projection	Growth Rates		Base	Projection	Growth Rates	
	Period ^{1/}	2010.0	89-99	99-2010	Period ^{1/}	2010.0	89-99	99-2010	Period ^{1/}	2010.0	89-99	99-2010
	(... 000 hectares...)				(... tonnes/ha...)				(... 000 tonnes...)			
	(...% per year...)				(...% per year...)				(...% per year...)			
WORLD	308 117	322 930	-0.9	0.4	2.9	3.1	2.1	0.7	893 512	1 006 731	1.1	1.1
DEVELOPING	184 394	198 635	0.0	0.7	2.0	2.2	2.2	0.7	372 246	431 275	2.1	1.3
AFRICA	70 540	79 605	1.5	1.1	1.0	1.1	0.2	1.0	71 383	89 786	1.7	2.1
NORTH AFRICA	4 808	5 130	-1.6	0.6	2.0	2.3	1.6	1.4	9 703	12 015	0.0	2.0
Algeria	587	732	-5.6	2.0	0.8	0.9	1.2	1.6	456	676	-4.4	3.7
Egypt	1 057	1 207	0.5	1.2	6.9	7.2	3.0	0.3	7 339	8 628	3.5	1.5
Morocco	2 610	2 459	-1.1	-0.5	0.6	0.8	-6.7	3.1	1 502	1 975	-7.7	2.5
SUB-SAHARA	65 732	74 474	1.8	1.1	0.9	1.0	0.2	1.0	61 680	77 771	2.0	2.1
Nigeria	15 730	19 047	2.1	1.8	1.2	1.3	0.5	0.9	19 110	25 560	2.6	2.7
Sudan	7 638	9 355	3.2	1.9	0.5	0.5	0.6	0.0	3 867	4 760	3.8	1.9
LATIN AMER. & CARIB.	32 184	36 375	0.2	1.1	2.8	3.0	3.3	0.7	90 244	110 217	3.5	1.8
CENTRAL AMERICA	11 673	12 611	0.8	0.7	2.4	2.5	1.9	0.5	27 920	31 727	2.7	1.2
Mexico	9 752	10 533	1.0	0.7	2.6	2.7	2.2	0.4	24 934	28 212	3.2	2.1
CARIBBEAN	531	499	0.5	-0.6	1.0	1.0	0.2	0.4	514	503	0.8	-0.2
SOUTH AMERICA	19 980	23 265	-0.2	1.4	3.1	3.4	4.1	0.7	61 811	77 987	3.9	2.1
Argentina	4 357	4 554	2.5	0.4	4.9	5.5	5.4	1.0	21 266	24 894	8.0	1.4
Brazil	12 097	14 933	-0.7	1.9	2.7	2.9	3.5	0.8	32 660	43 777	2.8	2.7
ASIA	81 666	82 652	-1.3	0.1	2.6	2.8	3.1	0.7	210 611	231 267	1.8	0.9
NEAR EAST	9 484	10 193	-2.6	0.7	1.8	1.9	2.3	0.9	16 691	19 754	-0.4	1.5
Iran Islamic Rep.	1 688	1 549	-4.2	-0.8	1.9	2.8	4.0	3.4	3 245	4 284	-0.3	2.6
Saudi Arabia	217	250	1.6	1.3	1.8	2.4	-3.6	2.5	396	597	-2.0	3.8
Turkey	4 554	4 582	0.8	0.1	2.3	2.5	0.7	0.8	10 470	11 441	1.5	0.8
SOUTH ASIA	32 564	32 740	-2.2	0.0	1.1	1.1	2.0	0.5	35 305	37 382	-0.3	0.5
India	29 417	29 440	-2.4	0.0	1.1	1.1	1.9	0.3	31 191	32 396	-0.6	0.3
SOUTH EAST ASIA	39 618	39 718	0.0	0.0	4.0	4.4	2.5	0.8	158 615	174 131	2.6	0.9
China	30 087	29 598	0.5	-0.1	4.5	5.0	2.4	1.0	135 446	148 326	2.9	0.8
Indonesia	3 597	3 681	1.3	0.2	2.7	2.8	2.7	0.3	9 686	10 195	4.0	0.5
Korea Rep.	103	91	-7.0	-1.1	3.5	4.1	-1.0	1.6	358	376	-7.9	0.4
Malaysia	27	38	3.7	3.0	2.1	2.5	1.7	1.6	57	94	5.5	4.6
OCEANIA	4	4	2.9	0.4	1.8	1.3	-3.2	-2.6	7	5	-0.3	-2.2
DEVELOPED	72 259	72 268	-1.0	0.0	5.9	6.4	3.1	0.8	424 546	462 941	2.1	0.8
NORTH AMERICA	43 234	43 693	0.0	0.1	6.9	7.6	2.9	0.9	296 145	331 110	2.9	1.0
Canada	7 352	7 305	-0.4	-0.1	3.6	3.9	1.9	0.8	26 112	28 398	1.5	0.8
United States	35 882	36 388	0.1	0.1	7.5	8.3	2.9	0.9	270 033	302 711	3.0	1.0
WESTERN EUROPE	20 013	19 133	-3.0	-0.4	5.4	5.7	3.6	0.4	108 267	108 300	0.5	0.0
EU (15)	19 654	18 796	-3.1	-0.4	5.4	5.7	3.6	0.4	106 618	106 749	0.5	0.0
OCEANIA	4 955	5 222	1.2	0.5	2.2	2.5	2.0	1.3	10 676	12 954	3.2	1.8
Australia	4 867	5 145	1.3	0.5	2.1	2.4	2.2	1.4	10 132	12 429	3.5	1.9
OTHER	4 057	4 220	-2.2	0.4	2.3	2.5	0.6	0.7	9 458	10 577	-1.6	1.0
Japan	91	69	-4.3	-2.5	2.3	2.4	-2.0	0.3	211	165	-6.2	-2.2
South Africa	3 952	4 137	-2.1	0.4	2.3	2.5	0.8	0.7	9 236	10 400	-1.3	1.1
TRANSITIONAL	51 465	52 027	-3.5	0.1	1.9	2.2	-1.0	1.3	96 720	112 515	-4.5	1.4
EASTERN EUROPE	15 847	16 172	-0.3	0.2	3.1	3.3	-0.9	0.7	48 544	53 657	-1.1	0.9
Bulgaria	811	846	-1.4	0.4	2.7	3.3	-2.8	2.1	2 158	2 824	-4.1	2.5
Hungary	1 699	1 914	0.9	1.1	4.5	5.1	-0.9	1.0	7 684	9 711	0.0	2.2
Poland	6 169	6 243	-0.1	0.1	2.6	2.7	-1.1	0.3	16 052	16 817	-1.2	0.4
Romania	3 582	3 702	0.2	0.3	2.6	2.8	-1.0	0.5	9 469	10 313	-0.8	0.8
CIS	34 347	34 715	70.8	0.1	1.3	1.6	0.0	1.8	45 718	56 420	0.0	1.9
Kazakhstan	2 174	2 116	0.0	-0.2	1.0	1.3	0.0	3.0	2 117	2 851	0.0	2.7
Russian Fed.	22 298	21 742	0.0	-0.2	1.1	1.4	0.0	2.2	25 364	31 424	0.0	2.0
Ukraine	6 520	7 313	0.0	1.0	1.9	2.0	0.0	0.7	12 153	14 695	0.0	1.7
BALTIC	1 271	1 140	0.0	-1.0	1.9	2.1	0.0	0.9	2 458	2 437	0.0	-0.1
LIFDC	140 817	149 193	0.2	0.5	1.9	2.0	1.8	0.6	266 093	300 423	1.9	1.1
LDC	45 211	50 224	1.9	1.0	0.8	0.9	0.3	0.9	37 874	46 263	2.1	1.8
NFDC	11 508	12 222	-0.5	0.5	1.6	1.9	0.8	1.3	18 845	22 986	0.3	1.8

1/ 1998-2000 Average

Basic food and feed crops

Table 2.11. Coarse grains: utilization projections

	TOTAL UTILIZATION				FOOD				FEED				PER CAPITA FOOD	
	Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010
	(... 000 tonnes ...) (... % per year ...)				(... 000 tonnes ...) (... % per year ...)				(... 000 tonnes ...) (... % per year ...)				(... Kg/year ...)	
WORLD	904 117	1 006 557	0.7	1.0	175 844	194 184	1.0	0.9	575 439	649 827	0.5	1.1	29.1	28.3
DEVELOPING	426 525	493 121	2.3	1.3	145 348	166 266	0.9	1.2	229 475	272 524	3.5	1.6	30.7	30.1
AFRICA	82 812	104 741	2.3	2.2	59 488	75 820	2.2	2.2	14 129	17 919	4.0	2.2	75.9	75.4
NORTH AFRICA	18 745	22 765	2.4	1.8	6 197	7 237	0.8	1.4	11 467	14 249	4.1	2.0	44.0	42.8
Algeria	2 361	2 720	-0.3	1.3	1 359	1 792	6.7	2.6	905	811	-5.2	-1.0	44.2	46.8
Egypt	11 222	13 498	5.0	1.7	3 258	3 609	1.1	0.9	7 417	9 176	8.3	2.0	48.5	45.1
Morocco	3 253	4 033	-1.0	2.0	1 432	1 673	-3.1	1.4	1 475	2 014	2.6	2.9	51.4	51.0
SUB-SAHARA	64 067	81 976	2.3	2.3	53 291	68 583	2.4	2.3	2 662	3 669	3.3	3.0	82.8	82.0
Nigeria	19 076	25 116	2.7	2.5	15 300	20 232	2.2	2.6	943	1 423	8.4	3.8	140.4	145.9
Sudan	3 880	4 775	4.5	1.9	3 176	3 917	4.1	1.9	319	427	13.4	2.7	110.0	108.0
LATIN AMER. & CARIB.	99 898	116 115	3.2	1.4	25 122	28 565	1.6	1.2	65 485	77 803	4.2	1.6	49.1	48.0
CENTRAL AMERICA	39 666	46 046	3.0	1.4	16 615	19 262	1.3	1.4	19 277	23 194	5.1	1.7	125.3	122.1
Mexico	34 862	40 544	3.0	1.4	13 807	16 009	1.1	1.4	17 535	21 220	5.3	1.7	141.8	141.8
CARIBBEAN	1 714	1 952	-2.0	1.2	376	477	-0.5	2.2	1 290	1 425	-2.3	0.9	10.7	12.2
SOUTH AMERICA	58 519	68 117	3.5	1.4	8 131	8 826	2.5	0.7	44 918	53 184	4.1	1.5	23.7	22.2
Argentina	9 528	10 210	4.5	0.6	262	307	3.6	1.4	7 490	7 960	4.2	0.6	7.2	7.4
Brazil	35 540	42 277	3.2	1.6	4 384	4 675	2.6	0.6	28 724	34 844	4.0	1.8	26.1	24.5
ASIA	243 794	272 243	2.0	1.0	60 728	61 872	-0.6	0.2	149 852	176 792	3.2	1.5	17.7	15.8
NEAR EAST	29 675	34 737	0.3	1.4	2 283	2 545	-1.4	1.0	25 368	29 970	0.7	1.5	9.2	8.1
Iran Islamic Rep.	5 211	6 777	0.7	2.4	48	73	-0.2	3.8	4 971	6 489	1.2	2.5	0.7	0.9
Saudi Arabia	6 840	8 091	-0.2	1.5	90	111	2.0	2.0	6 556	7 639	0.1	1.4	4.3	3.9
Turkey	10 950	11 739	1.1	0.6	1 101	1 149	0.0	0.4	8 673	9 480	1.4	0.8	16.8	15.1
SOUTH ASIA	35 858	37 279	-0.2	0.4	26 179	26 663	-1.8	0.2	7 430	8 386	18.1	1.1	19.8	17.1
India	31 552	32 086	-0.6	0.2	23 267	22 997	-2.2	-0.1	6 567	7 441	23.8	1.1	23.3	20.0
SOUTH EAST ASIA	178 262	200 227	2.9	1.1	32 266	32 665	0.6	0.1	117 054	138 436	3.4	1.5	17.4	15.9
China	142 665	159 447	3.3	1.0	22 014	21 845	-0.4	-0.1	97 242	114 606	4.1	1.5	17.3	15.8
Indonesia	10 268	11 444	4.6	1.0	5 532	5 625	2.5	0.2	2 668	3 605	9.0	2.8	26.4	23.6
Korea Rep.	9 086	10 301	1.2	1.1	189	145	-6.5	-2.4	6 783	7 738	0.2	1.2	4.1	2.9
Malaysia	2 522	3 104	5.4	1.9	40	45	-2.4	1.1	2 287	2 810	5.0	1.9	1.8	1.8
OCEANIA	21	21	-3.1	0.1	10	9	1.1	-1.4	9	11	-5.6	1.7	1.5	1.0
DEVELOPED	375 755	404 793	1.2	0.7	18 995	17 443	0.9	-0.8	277 525	302 024	0.8	0.8	21.3	18.9
NORTH AMERICA	235 747	261 303	1.9	0.9	5 953	5 593	3.8	-0.6	176 918	194 882	1.6	0.9	19.4	16.9
Canada	24 150	25 743	2.2	0.6	294	309	3.8	0.5	19 947	21 086	1.8	0.5	9.5	9.1
United States	211 597	235 560	1.8	1.0	5 659	5 284	3.8	-0.6	156 971	173 796	1.5	0.9	20.5	17.7
WESTERN EUROPE EU (15)	102 200	103 992	0.3	0.2	5 192	4 125	-1.1	-2.1	73 043	77 944	-0.2	0.6	13.4	10.6
	99 972	101 543	0.3	0.1	5 027	3 968	-1.2	-2.1	71 181	75 829	-0.2	0.6	13.4	10.6
OCEANIA	6 678	7 293	2.2	0.8	200	187	0.1	-0.6	5 547	6 055	2.7	0.8	8.9	7.5
Australia	6 045	6 555	2.4	0.7	185	171	1.8	-0.7	5 017	5 435	2.8	0.7	9.9	8.3
OTHER	31 130	32 205	-1.0	0.3	7 650	7 539	0.5	-0.1	22 018	23 143	-1.4	0.5	44.3	42.6
Japan	20 875	21 161	-1.7	0.1	3 104	2 952	-0.6	-0.5	17 110	17 552	-1.8	0.2	24.5	23.2
South Africa	8 863	9 509	0.5	0.6	4 471	4 501	1.3	0.1	3 614	4 166	-0.3	1.3	112.1	105.9
TRANSITIONAL	101 837	108 644	-5.1	0.6	11 502	10 475	2.5	-0.8	68 439	75 279	-6.3	0.9	27.9	25.3
EASTERN EUROPE	50 966	52 478	-1.2	0.3	3 565	3 156	-2.2	-1.1	38 714	41 062	-1.1	0.5	29.4	26.2
Bulgaria	2 118	2 490	-6.0	1.5	151	136	-2.2	-1.0	1 415	1 774	-8.0	2.1	18.2	17.5
Hungary	6 567	7 180	-1.8	0.8	59	108	-19.4	5.7	5 307	5 774	-2.2	0.8	5.8	11.2
Poland	17 448	17 395	-0.7	0.0	1 645	1 409	-0.2	-1.4	12 870	13 615	-1.1	0.5	42.5	36.0
Romania	10 450	10 592	-0.7	0.1	933	742	0.6	-2.1	8 020	8 134	0.9	0.1	41.6	34.5
CIS	48 293	53 457	0.0	0.9	7 583	6 981	0.0	-0.7	27 959	32 294	0.0	1.3	26.7	24.3
Kazakhstan	1 536	1 773	0.0	1.3	61	63	0.0	0.2	850	1 057	0.0	2.0	3.8	3.8
Russian Fed.	29 061	31 164	0.0	0.6	5 179	4 808	0.0	-0.7	16 215	18 666	0.0	1.3	35.2	33.3
Ukraine	11 185	12 812	0.0	1.2	1 438	1 264	0.0	-1.2	6 940	7 440	0.0	0.6	28.4	25.9
BALTIC	2 578	2 708	0.0	0.5	354	337	0.0	-0.4	1 766	1 923	0.0	0.8	47.3	48.4
LIFDC	279 565	319 787	2.4	1.2	113 316	129 545	0.5	1.2	127 632	150 206	4.4	1.5	30.3	29.6
LDC	38 753	49 696	2.2	2.3	32 508	42 032	2.4	2.4	1 747	2 317	4.7	2.6	47.5	47.6
NFDC	30 445	36 178	2.3	1.6	12 429	14 437	0.9	1.4	15 786	19 243	4.2	1.8	30.3	28.6

^{1/} 1998-2000 Average

Basic food and feed crops

Table 2.12. Coarse grains: trade projections

	IMPORTS				EXPORTS				IMPORT SHARE		EXPORT SHARE	
	Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010	Base Period ^{1/}	Projection 2010
	(. . . 000 tonnes . . .)		(. . . % per year . . .)		(. . . 000 tonnes . . .)		(. . . % per year . . .)		(. . . . %)		(. . . . %)	
WORLD	104 111	119 280	-0.1	1.2	104 111	119 213	1.9	1.2	100.0	100.0	100.0	100.0
DEVELOPING	69 759	84 208	3.8	1.7	22 718	21 803	6.6	-0.4	67.0	70.6	21.8	18.3
AFRICA	12 675	16 651	6.1	2.5	1 525	1 295	1.8	-1.5	12.2	14.0	1.5	1.1
NORTH AFRICA	9 257	10 807	6.0	1.4			0.0	0.0	8.9	9.1	0.0	0.0
Algeria	1 896	2 051	1.2	0.7			0.0	0.0	1.8	1.7	0.0	0.0
Egypt	4 153	4 897	9.4	1.5			0.0	0.0	4.0	4.1	0.0	0.0
Morocco	1 685	2 085	19.2	2.0			0.0	0.0	1.6	1.7	0.0	0.0
SUB-SAHARA	3 418	5 844	6.2	5.0	1 525	1 295	1.8	-1.5	3.3	4.9	1.5	1.1
Nigeria	80	6	4.4	-20.8	148	418	9.1	9.9	0.1	0.0	0.1	0.4
Sudan	120	195	-5.4	4.6	333	140	-3.7	-7.6	0.1	0.2	0.3	0.1
LATIN AMER. & CARIB.	21 421	23 345	5.7	0.8	12 676	17 389	12.0	2.9	20.6	19.6	12.2	14.6
CENTRAL AMERICA	11 969	14 430	4.3	1.7	54	70	0.0	2.4	11.5	12.1	0.1	0.1
Mexico	10 081	12 389	3.3	1.9	24	24	0.0	0.0	9.7	10.4	0.0	0.0
CARIBBEAN	1 403	1 654	-1.7	1.5	204	204	88.7	0.0	1.3	1.4	0.2	0.2
SOUTH AMERICA	8 049	7 261	11.0	-0.9	12 419	17 116	11.7	-3.0	7.7	6.1	11.9	14.4
Argentina	24	24	0.0	0.1	11 658	14 702	11.7	2.1	0.0	0.0	11.2	12.3
Brazil	1 844	174	10.4	-19.3	170	1 711	19.8	23.3	1.8	0.1	0.2	1.4
ASIA	35 650	44 196	2.3	2.0	8 516	3 119	2.6	-8.7	34.2	37.1	8.2	2.6
NEAR EAST	14 216	16 443	2.1	1.3	860	1 572	5.4	5.6	13.7	13.8	0.8	1.3
Iran Islamic Rep.	1 953	2 516	2.5	2.3	3	3	0.0	0.0	1.9	2.1	0.0	0.0
Saudi Arabia	6 455	7 469	1.0	1.3			0.0	0.0	6.2	6.3	0.0	0.0
Turkey	1 186	1 430	2.7	1.7	540	1 251	20.8	7.9	1.1	1.2	0.5	1.0
SOUTH ASIA	466	419	5.8	-0.9			526	0.0	0.4	0.4	0.0	0.4
India	264	186	1.3	-3.1			495	0.0	0.3	0.2	0.0	0.4
SOUTH EAST ASIA	20 969	27 334	2.4	2.4	7 656	1 021	2.3	-16.7	20.1	22.9	7.4	0.9
China	7 536	11 354	0.6	3.8	6 824	61	3.9	-34.9	7.2	9.5	6.6	0.1
Taiwan Province	5 132	6 157	-1.6	1.7			-	0.0	4.9	5.2	-	-
Indonesia	742	1 472	36.9	6.4	210	211	0.0	0.0	0.7	1.2	0.2	0.2
Korea Rep.	8 747	9 937	2.2	1.2			0.0	0.0	8.4	8.3	0.0	0.0
Malaysia	2 486	3 005	5.4	1.7			0.0	0.0	2.4	2.5	0.0	0.0
OCEANIA	13	16	-3.8	1.8			0.0	0.0	0.0	0.0	0.0	0.0
DEVELOPED	30 100	30 821	-1.4	0.2	76 196	89 361	0.4	1.5	28.9	25.8	73.2	75.0
NORTH AMERICA	4 191	4 169	6.2	0.0	59 741	74 281	0.1	2.0	4.0	3.5	57.4	62.3
Canada	1 657	1 862	7.6	1.1	3 616	4 554	-1.4	2.1	1.6	1.6	3.5	3.8
United States	2 535	2 307	5.4	-0.9	56 124	69 727	0.2	2.0	2.4	1.9	53.9	58.5
WESTERN EUROPE	3 251	3 307	-7.4	0.2	11 079	7 711	1.1	-3.2	3.1	2.8	10.6	6.5
EU (15)	2 738	2 402	-8.0	-1.2	11 071	7 703	1.1	-3.2	2.6	2.0	10.6	6.5
OCEANIA	86	217	2.0	8.8	4 342	5 919	5.8	2.9	0.1	0.2	4.2	5.0
Australia	1	1	-17.2	-0.1	4 338	5 915	6.0	2.9	0.0	0.0	4.2	5.0
OTHER	22 572	23 128	-1.1	0.2	1 035	1 451	-6.6	3.1	21.7	19.4	1.0	1.2
Japan	20 652	21 002	-1.6	0.2			0.0	0.0	19.8	17.6	0.0	0.0
South Africa	527	598	71.8	1.2	1 035	1 451	-6.6	3.1	0.5	0.5	1.0	1.2
TRANSITIONAL	4 252	4 250	-15.6	0.0	5 198	8 049	17.7	4.1	4.1	3.6	5.0	6.8
EASTERN EUROPE	2 220	2 837	-5.5	2.3	2 751	3 874	14.3	3.2	2.1	2.4	2.6	3.2
Bulgaria	53	57	-22.0	0.6	259	331	22.7	2.2	0.1	0.0	0.2	0.3
Hungary	41	41	-21.0	0.0	1 521	2 527	20.3	4.7	0.0	0.0	1.5	2.1
Poland	821	574	-1.4	-3.2	18	18	-17.9	0.0	0.8	0.5	0.0	0.0
Romania	213	502	-14.9	8.1	220	213	4.7	-0.3	0.2	0.4	0.2	0.2
CIS	1 845	1 065	0.0	-4.9	2 354	4 098	0.0	5.2	1.8	0.9	2.3	3.4
Kazakhstan		12	0.0	0.0	550	1 094	0.0	6.5	0.0	0.0	0.5	0.9
Russian Fed.	1 323	558	0.0	-7.5	270	897	0.0	11.5	1.3	0.5	0.3	0.8
Ukraine	71	73	0.0	0.3	1 383	1 945	0.0	3.1	0.1	0.1	1.3	1.6
BALTIC	187	348	0.0	5.8	93	77	0.0	-1.7	0.2	0.3	0.1	0.1
LIFDC	14 919	22 472	8.1	3.8	8 939	2 573	4.4	-10.7	14.3	18.8	8.6	2.2
LDC	2 144	4 494	3.5	7.0	1 431	863	6.1	-4.5	2.1	3.8	1.4	0.7
NFDC	11 806	13 664	7.0	1.3	259	361	7.4	3.1	11.3	11.5	0.2	0.3

^{1/} 1998-2000 Average

Basic food and feed crops

Oilseeds, oils and oilmeals

Oilcrops

Introduction

The oilcrops complex is projected to remain the fastest growing of the major agricultural sectors in the decade to 2010. An important feature is the robust supply growth in low-cost developing countries, notably in South America where exchange rate adjustments have increased their competitiveness. Policy changes have had mixed effects; reform of support across commodities in the last decade has favoured oilseed production in the United States but limited production growth in the EU. The high growth witnessed in palm production may slow, as a rejuvenation cycle in the Malaysian and Indonesian palm oil sectors may limit the rate of expansion during the period. Growth in demand for both oils and meals should remain firm given projected income growth and the relatively high sensitivity of both oil consumption and meal (via meat) consumption to income changes.

Several factors will condition development of the sector. Food safety and environmental concerns will increasingly affect the production and trade of oilseeds and products. Associated regulations will make markets more complex, leading to increased labelling requirements and possibly to identity preservation marketing systems. Such developments will inevitably affect trade. In addition, the oilcrop sector may increasingly serve a growing demand for bio-fuels, particularly as a result of policy enhancements in some countries, particularly the industrialized countries of the Organization for Economic Cooperation and Development (OECD).

Oils and fats

Production

Globally, growth in annual production of oils and fats is projected at 2.6 percent over the decade to 2010, down from 4.5 percent in the previous decade. Of the oils, palm oil is anticipated to again increase its share of the production to 22 percent, growing over 4.3 percent annually over the period; however this growth is down markedly from the 6.6 growth

of the previous decade. Soy oil will maintain or marginally increase its production share, at around 23 percent of total oil production. Other oils, with the possible exception of animal fats, are expected to decline in production share.

Regionally, production growth of oils and fats will reflect trends that are similar to those for other commodities, where production growth in developing countries, at 3.3 percent annually, exceeds that in the developed countries, and where the marked turnaround in the transition countries is a significant development. Production growth in developing countries is most striking in Brazil and Argentina, where production is projected to increase by 3.9 percent and 3.5 percent respectively, due almost entirely to growth in soy oil production. In Indonesia and Malaysia, palm oil production is projected to grow 6.5 percent and 3.7 percent. This growth is down markedly from the previous decade as replacement of older trees by newer ones will reduce growth in harvesting in the early part of the projection period. For all fats and oils, world production will remain concentrated in a few countries. About 80 percent of world production is accounted for by 11 countries, of which 4 are developed and 7 are developing countries. This percentage is expected to increase further during the projection period.

An important issue for the oilseed oil markets over the medium term is the production and marketing of GM crops, particularly in countries producing either soybean oil or rapeseed (canola) oil. The main thrust of GM crops has been to raise yields, and to reduce costs of production, and hence encourage higher supplies. However, countries have been making choices for GM or non-GM crops according to domestic and export market characteristics. In some countries, adoption has been swift, while in others, restrictive regulatory measures have created the situation where markets are increasingly segmented. Throughout the projection period, this issue will be a critical one, with considerable uncertainties as to the size of any market premiums for non-GM oil. Even within certain countries, it is expected that mandatory identity preservation systems will increasingly be applied in order to respond to differing consumer requirements.

Demand

Most of the global growth in consumption of oils and fats of 2.5 percent annually is anticipated to occur in developing countries, reflecting higher population and income growth, and a lower base level of consumption. The growth in these countries is projected to average 2.8 percent (compared to 1.8 percent in developed countries), and their share of the market should increase marginally from 60 percent to 62 percent by 2010. In per capita terms, growth is anticipated to be highest in transition countries, where the turnaround in income will encourage higher consumption. Disparity among countries in the consumption levels of oils and fats will remain, with developing countries consuming on an average per capita basis less than one-third of that of developed countries.

Rising consumer concerns about food safety and environmental issues in many countries have been affecting domestic and international markets. This trend is expected to continue on a number of fronts. The most critical consumer concern is for genetically modified organisms (GMO) products. Segmentation of markets, which has been evolving rapidly in recent years, can be expected to continue not only among countries, but perhaps also within countries. In other areas, increasing regulation and quality standards, including Sanitary and Phytosanitary (SPS) measures, will affect trade in markets; examples include aflatoxin levels in groundnuts, and industry codes of practice for safe storage and transportation of oils and fats used for food.

The non-food use of oils and fats is projected to grow, especially given a favourable policy climate in certain, particularly developed countries. In the United States, the EU and elsewhere, countries are supporting increased use of bio-fuel, given their relatively favourable environmental impact, and to some extent, its role in replacing imports of crude oil. The oleochemical industry, which currently uses about 15 percent of oils and fats production, is also projected to continue to grow more rapidly than the demand for food uses, with some developing countries playing a more prominent role.

Trade

Global export of oils and fats is projected to grow by about 15 million tonnes by 2010

compared to base period levels. With a highly concentrated profile of production by country, growth in production by a few countries is projected to represent the largest increase in exports, while increasing consumption of oils and fats by all countries implies an increasing diffusion of imports. In the base period, about 85 percent of exports were supplied by nine countries (four developed and five developing). This percentage is expected to grow during the projection period, with an increasing share of Brazil and Argentina (soy oil), and Malaysia and Indonesia (palm oil). The export share of the US, presently the second largest exporter, is expected to fall from 18 percent currently to 12 percent by 2010. These data underscore an important aspect of oils and fats markets, namely that changes in trade are occurring mostly among the developing countries. Their export share may increase from 60 percent to 70 percent, and their import share from 61 percent to 65 percent. Western Europe and Africa are expected to increase their dependency on imported oils and fats.

Prices

The long-term trend decline in real soybean oil prices¹ in international markets has been in the order of 2.4 percent per year. Such a decline has resulted from large productivity gains in the production of the various oilseeds, and especially in the supply of palm oil. Real prices of oils and fats are expected to move back to trend levels after reaching recent historic lows early in the projection period (2000–2001). The return to trend levels reflects continued strength in underlying demand for oils and fats, given prospects for income and demographic growth over the period, and the sensitivity of consumption to these changes, particularly in developing countries.

¹ Northern Europe, in US dollars, deflated by the United States Producer Price Index. (*Source*: IMF).

Basic food and feed crops

Table 2.13. Oils and fats: production and consumption projections

OILS	PRODUCTION				TOTAL CONSUMPTION				PER CAPITA	
	Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010
	(...000 tonnes...)		(...% per year...)		(...000 tonnes...)		(...% per year...)		(...kg/person...)	
WORLD	110 287	145 704	4.5	2.6	111 594	145 682	4.4	2.5	18.5	21.2
DEVELOPING	65 064	92 976	5.3	3.3	66 677	90 114	5.7	2.8	14.1	16.3
AFRICA	5 031	5 866	3.0	1.4	8 188	11 189	3.9	2.9	10.4	11.1
NORTH AFRICA	566	669	2.6	1.5	2 834	3 699	3.8	2.5	20.1	21.9
Egypt	178	174	4.3	-0.2	1 348	1 817	4.7	2.7	20.1	22.7
Morocco	112	143	-1.3	2.2	557	679	6.2	1.8	20.0	20.7
SUB-SAHARA	4 465	5 198	3.0	1.4	5 354	7 490	3.9	3.1	8.3	9.0
Côte d'Ivoire	402	444	3.2	0.9	304	382	7.2	2.1	20.9	21.0
Nigeria	1 513	1 747	2.2	1.3	1 653	2 260	3.2	2.9	15.2	16.3
Ethiopia	115	143	5.9	2.0	136	212	3.3	4.2	1.1	1.3
LATIN AMER. & CARIB.	16 975	24 571	5.6	3.4	11 647	14 766	3.9	2.2	22.8	24.8
CENTRAL AMERICA	895	1 224	2.1	2.9	3 187	3 958	5.3	2.0	24.0	25.1
Mexico	467	732	-0.6	4.2	2 458	2 897	5.2	1.5	25.2	25.7
CARIBBEAN	73	76	-0.1	0.4	525	665	-0.7	2.2	14.9	16.9
Dominican Rep.	42	45	2.0	0.7	214	281	3.5	2.5	25.6	29.0
SOUTH AMERICA	16 007	23 271	5.9	3.5	7 935	10 144	3.8	2.3	23.1	25.5
Argentina	6 500	9 443	7.3	3.5	963	1 239	2.7	2.3	26.3	29.9
Brazil	6 928	10 534	5.1	3.9	4 210	5 504	3.9	2.5	25.1	28.8
Chile	205	222	-2.9	0.7	443	498	6.4	1.1	29.5	29.3
Uruguay	74	91	5.1	1.9	27	47	-2.5	5.1	8.2	13.1
ASIA	42 527	61 930	5.5	3.5	46 644	63 910	6.5	2.9	13.6	16.3
NEAR EAST	1 375	1 607	2.6	1.4	5 044	6 370	5.4	2.1	20.2	20.3
Iran Islamic Rep.	242	278	6.9	1.3	1 381	1 733	7.4	2.1	20.7	22.5
Saudi Arabia	3	3	-7.3	0.0	328	457	3.8	3.1	15.7	15.9
Turkey	792	904	0.6	1.2	1 819	2 196	3.9	1.7	27.7	28.9
SOUTH ASIA	9 360	12 209	4.6	2.4	15 810	21 652	6.8	2.9	12.0	13.9
India	8 200	10 750	4.5	2.5	12 157	16 238	7.4	2.7	12.2	14.1
Pakistan	918	1 193	6.9	2.4	2 492	3 808	4.6	3.9	16.4	19.1
SOUTH EAST ASIA	31 792	48 115	6.0	3.8	25 790	35 888	6.6	3.0	13.9	17.5
China, Mainland	10 156	13 602	5.6	2.7	14 249	21 006	6.9	3.6	11.4	15.6
Indonesia	7 577	14 235	9.6	5.9	3 659	5 412	5.8	3.6	17.5	22.7
Korea Rep	80	82	-0.7	0.3	847	849	3.2	0.0	18.2	17.0
Malaysia	11 176	16 869	5.5	3.8	2 676	3 325	5.9	2.0	122.6	128.3
Philippines	1 305	1 504	-0.1	1.3	592	783	3.4	2.6	7.9	8.6
Singapore			0.0	-12.8	569	628	0.0	0.9	161.6	161.6
Thailand	688	919	6.6	2.7	812	1 015	7.8	2.1	13.3	15.3
Viet Nam	244	273	7.2	1.0	393	635	14.3	4.5	5.0	7.0
OCEANIA	532	608	6.5	1.2	199	249	13.2	2.1	28.2	28.4
DEVELOPED	38 749	44 456	4.3	1.3	38 600	47 187	3.9	1.8	43.4	51.1
NORTH AMERICA	24 206	28 426	4.8	1.5	14 992	20 369	3.9	2.8	48.8	61.4
Canada	3 937	4 613	9.2	1.5	1 165	1 687	6.3	3.4	37.8	49.7
United States	20 269	23 813	4.1	1.5	13 826	18 682	3.8	2.8	50.1	62.7
WESTERN EUROPE	11 923	12 781	3.6	0.6	18 971	21 621	4.2	1.2	48.9	55.6
EU(15)	11 615	12 486	3.6	0.7	18 380	20 989	4.2	1.2	49.0	55.9
OCEANIA	1 832	2 442	9.5	2.6	548	728	-0.4	2.6	24.3	29.3
Australia	1 394	1 909	9.0	2.9	440	578	-1.1	2.5	23.5	28.0
New Zealand	438	532	11.3	1.8	108	150	2.9	3.0	28.2	35.6
OTHER DEVELOPED	788	808	-3.5	0.2	4 090	4 469	2.9	0.8	23.7	25.2
Japan	362	315	-7.0	-1.3	3 067	3 248	2.5	0.5	24.2	25.5
South Africa	402	464	1.1	1.3	824	948	3.8	1.3	20.6	22.3
TRANSITIONAL	6 474	8 271	-1.0	2.3	6 317	8 381	-1.9	2.6	15.3	20.2
EASTERN EUROPE	2 906	3 477	0.9	1.6	2 732	3 458	0.9	2.2	22.5	28.7
Hungary	518	620	-0.5	1.7	318	464	0.7	3.5	31.6	48.2
Poland	689	829	-0.6	1.7	904	1 192	4.2	2.5	23.3	30.4
Czech Rep.	361	393	0.0	0.8	296	331	0.0	1.0	28.8	32.9
CIS	3 473	4 688	0.0	2.8	3 423	4 763	0.0	3.0	12.1	16.6
Kazakhstan	66	69	0.0	0.5	128	154	0.0	1.7	7.9	9.4
Russian Fed.	1 685	2 489	0.0	3.6	2 023	2 832	0.0	3.1	13.7	19.6
Ukraine	1 109	1 467	0.0	2.6	525	800	0.0	3.9	10.4	16.4
BALTIC	94	107	0.0	1.1	161	160	0.0	-0.1	21.6	22.9

Table 2.14. Oils and fats: trade projections

OILS	IMPORTS				EXPORTS				IMPORT SHARE		EXPORT SHARE	
	Base Period ^{1/}	Projection 2010	Growth Rates 89-99		Base Period ^{1/}	Projection 2010	Growth Rates 89-99		Base Period ^{1/}	Projection 2010	Base Period ^{1/}	Projection 2010
	(...000 tonnes...)		(...% per year...)		(...000 tonnes...)		(...% per year...)		(..... %		(..... %	
WORLD	47 255	60 305	6.9	2.2	44 735	60 343	6.8	2.8	100.0	100.0	100.0	100.0
DEVELOPING	28 829	39 230	8.5	2.8	26 685	42 158	7.4	4.2	61.0	65.1	59.7	69.9
AFRICA	3 883	6 033	5.1	4.1	765	704	3.9	-0.8	8.2	10.0	1.7	1.2
NORTH AFRICA	2 398	3 207	4.3	2.7	170	172	9.9	0.1	5.1	5.3	0.4	0.3
Egypt	1 185	1 656	4.9	3.1	12	11	18.5	0.0	2.5	2.7	0.0	0.0
Morocco	453	550	9.1	1.8	14	14	0.6	0.1	1.0	0.9	0.0	0.0
SUB-SAHARA	1 484	2 826	6.5	6.0	595	532	2.8	-1.0	3.1	4.7	1.3	0.9
Côte d'Ivoire	25	27	12.6	0.7	122	89	-1.9	-2.9	0.1	0.0	0.3	0.1
Nigeria	184	559	26.7	10.6	45	44	4.4	-0.1	0.4	0.9	0.1	0.1
Ethiopia	44	92	2.1	7.0	23	22	27.4	-0.1	0.1	0.2	0.1	0.0
LATIN AMER. & CARIB.	5 010	5 758	7.1	1.3	10 074	15 540	8.7	4.0	10.6	9.5	22.5	25.8
CENTRAL AMERICA	2 592	2 961	7.7	1.2	239	220	15.4	-0.8	5.5	4.9	0.5	0.4
Mexico	2 130	2 251	7.8	0.5	79	78	13.6	0.0	4.5	3.7	0.2	0.1
CARIBBEAN	452	589	-0.9	2.4			-37.0	0.0	1.0	1.0	0.0	0.0
Dominican Rep.	172	236	3.5	2.9			0.0	0.0	0.4	0.4	0.0	0.0
SOUTH AMERICA	1 966	2 208	9.6	1.1	9 834	15 320	8.6	4.1	4.2	3.7	22.0	25.4
Argentina	157	171	45.5	0.8	5 532	8 366	8.3	3.8	0.3	0.3	12.4	13.9
Brazil	482	527	12.3	0.8	3 155	5 553	7.8	5.3	1.0	0.9	7.1	9.2
Chile	251	311	14.4	2.0	34	34	-10.5	0.0	0.5	0.5	0.1	0.1
Uruguay	22	27	7.2	1.6	69	71	12.4	0.2	0.0	0.0	0.2	0.1
ASIA	19 893	27 391	9.7	3.0	15 470	25 507	6.9	4.7	42.1	45.4	34.6	42.3
NEAR EAST	3 888	5 002	6.7	2.3	240	239	7.2	0.0	8.2	8.3	0.5	0.4
Iran Islamic Rep.	1 180	1 496	7.9	2.2	41	40	0.0	-0.1	2.5	2.5	0.1	0.1
Saudi Arabia	327	456	4.1	3.1	3	3	0.0	0.0	0.7	0.8	0.0	0.0
Turkey	1 174	1 459	6.7	2.0	168	168	3.7	0.0	2.5	2.4	0.4	0.3
SOUTH ASIA	6 981	9 881	12.1	3.2	423	422	29.2	0.0	14.8	16.4	0.9	0.7
India	4 378	5 903	20.6	2.8	402	402	48.8	0.0	9.3	9.8	0.9	0.7
Pakistan	1 672	2 626	4.0	4.2	9	9	37.6	0.0	3.5	4.4	0.0	0.0
SOUTH EAST ASIA	9 024	12 508	9.7	3.0	14 808	24 846	6.6	4.8	19.1	20.7	33.1	41.2
China, Mainland	4 799	7 776	11.2	4.5	489	492	6.8	0.1	10.2	12.9	1.1	0.8
Indonesia	113	128	-10.1	1.2	4 142	8 951	12.6	7.3	0.2	0.2	9.3	14.8
Korea Rep.	775	775	3.9	0.0	8	8	36.5	0.0	1.6	1.3	0.0	0.0
Malaysia	680	731	9.9	0.7	9 016	14 271	5.4	4.3	1.4	1.2	20.2	23.6
Philippines	193	212	16.9	0.8	957	930	0.2	-0.3	0.4	0.4	2.1	1.5
Singapore	569	628	0.0	0.9			0.0	0.1	1.2	1.0	0.0	0.0
Thailand	226	200	25.8	-1.1	103	103	40.5	0.1	0.5	0.3	0.2	0.2
Viet Nam	196	409	61.9	6.9	47	47	9.4	-0.1	0.4	0.7	0.1	0.1
OCEANIA	43	49	7.5	1.2	376	408	4.3	0.7	0.1	0.1	0.8	0.7
DEVELOPED	16 274	18 568	4.9	1.2	15 770	15 788	5.6	0.0	34.4	30.8	35.3	26.2
NORTH AMERICA	2 560	2 841	5.8	0.9	11 256	10 830	5.7	-0.4	5.4	4.7	25.2	17.9
Canada	505	571	11.4	1.1	3 037	3 502	10.0	1.3	1.1	0.9	6.8	5.8
United States	2 055	2 270	4.7	0.9	8 219	7 329	4.5	-1.0	4.3	3.8	18.4	12.1
WESTERN EUROPE	10 072	11 668	5.1	1.3	2 857	2 844	3.7	0.0	21.3	19.3	6.4	4.7
EU(15)	9 605	11 158	5.1	1.4	2 673	2 671	3.7	0.0	20.3	18.5	6.0	4.4
OCEANIA	264	290	2.0	0.9	1 548	2 004	14.9	2.4	0.6	0.5	3.5	3.3
Australia	200	219	1.5	0.8	1 154	1 550	15.6	2.7	0.4	0.4	2.6	2.6
New Zealand	64	71	3.4	1.0	394	454	13.1	1.3	0.1	0.1	0.9	0.8
OTHER DEVELOPED	3 377	3 769	4.0	1.0	109	109	-10.5	0.0	7.1	6.3	0.2	0.2
Japan	2 684	2 944	3.4	0.8	12	12	-26.6	0.0	5.7	4.9	0.0	0.0
South Africa	513	576	6.8	1.1	91	91	4.8	0.0	1.1	1.0	0.2	0.2
TRANSITIONAL	2 153	2 507	3.5	1.4	2 281	2 397	8.8	0.5	4.6	4.2	5.1	4.0
EASTERN EUROPE	839	1 027	4.6	1.9	1 021	1 046	4.2	0.2	1.8	1.7	2.3	1.7
Hungary	96	109	11.1	1.1	306	264	0.8	-1.3	0.2	0.2	0.7	0.4
Poland	337	482	9.6	3.3	119	119	-7.6	0.0	0.7	0.8	0.3	0.2
Czech Rep.	111	116	0.0	0.3	177	178	0.0	0.1	0.2	0.2	0.4	0.3
CIS	1 181	1 361	0.0	1.3	1 194	1 286	0.0	0.7	2.5	2.3	2.7	2.1
Kazakhstan	65	89	0.0	2.8	4	4	0.0	-0.1	0.1	0.1	0.0	0.0
Russian Fed.	835	810	0.0	-0.3	471	467	0.0	-0.1	1.8	1.3	1.1	0.8
Ukraine	50	57	0.0	1.3	623	723	0.0	1.4	0.1	0.1	1.4	1.2
BALTIC	133	118	0.0	-1.0	66	65	0.0	-0.1	0.3	0.2	0.1	0.1

1/ 1998-2000 Average

Basic food and feed crops

Oilmeals

Production

Annual growth in oilmeal production is projected to average 2.3 percent annually over the decade to 2010, down from 4.0 percent in the previous decade. Soymeal dominates the meal market, and its share of production is projected to rise from 64 percent in the base period, to 66 percent by 2010; the shares of all other meals, except for rapemeal and fishmeal are projected to decline.

Regionally, oilmeal production in low-cost developing countries is projected to account for most of the increase, growing annually on average by 3.2 percent over the decade to 2010. Of the total oilmeal production increase of 23 million tonnes, 17 million tonnes will come from developing countries. Such growth is led by Brazil and Argentina, whose production may increase annually by 3.9 percent and 4.5 percent, respectively. Their total increase is projected to be 11.6 million tonnes or almost half of the increase in world production during the period. By contrast, oilmeal production in developed countries is projected to advance only 1.3 percent annually, significantly down from an annual growth rate of over 4 percent in the previous decade. This slow growth in the developed countries is due particularly to the EU (0.4 percent annual growth) policy changes inherent in the policy reform of Agenda 2000.

The production of oilmeals shows a yet more concentrated production profile than oils and fats, largely due to the dominance of the United States, Brazil and Argentina in soybeans. Nine countries (three developed and six developing) supply over 86 percent of world production. This concentration is set to remain fairly constant during the projection period, as increases in production shares of some countries are offset by a decline in others. For example, the production share of the United States is projected to fall from 34 percent to 30 percent.

Demand

The demand picture for oilmeals is critically driven by their use as feed to livestock production (meats and dairy). As more fully

discussed in Section 2.2, the medium-term prospects for livestock production are also among the most robust of the agricultural commodity sectors, with growth in global meat production and dairy production growing at a rate of 2.2 percent annually. Notably, the increase in livestock production is much stronger in developing countries, and particularly where incomes are growing more quickly. Critical factors in this case are the composition of livestock production, and changes in feed efficiency that are expected to occur over the period. Hence, the projection for global oilmeal consumption to rise 2.4 percent annually over the decade to 2010 comprises a projected annual increase in developing countries of 3.0 percent, and in developed countries of 1.6 percent. While the growth rates in developing countries are from a very low base level, the quantum increase is still significant. For example, Southeast Asia will account for 7 million tonnes of the total projected increase of some 22.5 million tonnes from the base period to 2010.

A major factor affecting the demand for oilmeals in recent years has been regulations banning the use of feeds derived from animals, specifically meat and bonemeal (MBM) feed. In the EU, following the BSE crisis, all feeding of MBM feed was banned, resulting in a sizeable increase in demand for oilmeals. Such regulations have also been established in most other jurisdictions. This effect on demand is expected to be sustained over the projection period. However, a further effect may be anticipated if certain jurisdictions extend the ban to all animal-sourced feeds, such as in North America where only ruminant-to-ruminant meat-and-bone meal (MBM) feeds have been banned to date.

Trade

Global exports in oilmeals are projected to grow by 12.4 million tonnes or by one-third over the projection period. This growth is almost fully accounted for by developing countries, with 10.5 million tonnes. Brazil and Argentina are set to contribute the largest share, with a 9.4 million tonne increase. Growth in exports by the developed countries is projected to be low, at only 1.5 million tonnes. This is mostly due to the United States, which is anticipated to remain, on average, the

largest exporter, marginally ahead of both Brazil and Argentina. These three producers are expected to account for 78 percent of global exports by 2010, compared to 74 percent in the base period.

Out of the total increase in global imports, and following the demand picture outlined, Southeast Asia is projected to increase imports by 4.4 million tonnes and the Near East by almost 1 million tonnes. The EU will remain the world's largest importer of oilmeals, where imports are projected to increase by 3.2 million tonnes. However, the EU's share of imports may decline from 41 percent to 38 percent by the end of the projection period.

Prices

The long-term trend decline in real soybean meal prices¹ in international markets has been 1.9 percent per year. Such a decline results from increased productivity growth in the oilseeds complex. The decline in real oilmeal prices is less than that for oils and fats. This is generally explained by large increases of palm oil supplies putting downward pressure on the prices of oils relative to meals. Over the projection period, real meal prices are expected to remain stable after increasing modestly from lower levels early in the projection period, but remaining somewhat under their long-term trend level. A modestly strong growth in livestock production should help to underpin prices.

Issues and uncertainties

The importance of the oilcrops sector to the world agricultural and food economy is likely to continue to grow in the current decade. Increasing country concentration of production and exports is an important issue for both the oils and fats and the oilmeals sector. On the consumption side, growth in oils and fats, and growth in oilmeals through meat consumption will add considerably to the supply of energy and protein in consumer diets, with the potential to help address food security concerns.

Three key critical factors out of several affecting the actual evolution of the sector are worthy of further elaboration: macroeconomic uncertainty, the evolution of market acceptance and technologies surrounding GMOs, and policy changes in important markets.

In recent years, macro-economic developments in the form of the depreciation of real exchange rates, particularly in Brazil and Argentina during their currency crises of recent years, have formed the basis of increased competitiveness and growth in production and trade. Much the same argument holds for the depreciation of real exchange rates in Malaysia and Indonesia during the financial crisis of the late 1990s that has affected their competitiveness in supplying palm oil. As these are key supplying regions, their output is expected to increase considerably over the medium term. Further macroeconomic instability could alter their supply potential. If the expansion in production in either of these regions is not realized, markets and trade will be considerably affected.

With respect to GMO products, the potential for increased market segmentation is high, with the result being dual markets for both oilseed oils and oilseed meals. On the demand side, as many countries adopt regulations limiting production and imports of GMO products, markets may be disrupted, particularly for those exporting GMO products. Considerable impact on prices could be experienced. To the extent that supplying countries can provide identity preservation of GMO-free production, such disruptions will be minimized. However, provision of such schemes is costly and dependent on stable price premiums. Available estimates of the price premiums for GMO-free products have neither shown consistency nor stability.

Policy change in international agriculture is ongoing. Domestic and trade policy measures in the oilcrop sector are thought to have relatively smaller impact on markets and trade than for other sectors, but they may nevertheless be significant. The most important policies are those of the United States and the EU, where recent policy changes have been undertaken. A study of the impact of the 2002 US Farm Act indicates that

¹ Northern Europe, in US dollars, deflated by the United States Producer Price Index. *Source* IMF.

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compared to previous legislation, only a very marginal decline in soybean production can be anticipated, with little impact on domestic and world prices.¹ In the EU, analysis of proposals under the Mid-Term Review of the Common Agricultural Policy indicate potential declines in oilseed area of between 3 and 9 percent, as a result of changes in set-asides, direct payments and intervention prices for the different crops.² Such a decline in production in the EU would lead to changes in trade and increased international prices for both oilmeals and oils. Actual policy decisions taken in July 2003, however, might indicate a somewhat lower impact. The enlargement of the EU to 25 members is expected to lead to a modest expansion in oilseed area, production and utilization. Therefore, in sum, it is anticipated that while these policy changes may be

important, their effects on world markets are likely to be relatively minor.

New policy interventions, particularly in the area of bio-fuel production and use, may increasingly affect markets. Recent United States and EU policy changes, for example, have included provisions for the expansion of bio-fuel production. Other countries have also implemented such programmes. One study has outlined potential significant impacts of such policies in OECD countries, whereby increasing the bio-fuel content of transportation fuel could significantly increase crop prices and alter trade patterns.³ The estimates underscore the important issue of the growing non-food uses of oilcrops, which will increasingly affect market outcomes.

¹ *The 2002 Farm Act: provisions and implications for commodity markets*, USDA, November 2002.

² *The Mid Term Review of the Common Agricultural Policy: The July 2002 Proposals*, EU Commission, January, 2003.

³ *An economic analysis of a major bio-fuel program undertaken by OECD Countries*. Agriculture and Agri-food Canada, January 2002.

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Table 2.15. Oilmeals: production and consumption projections

MEALS	PRODUCTION				TOTAL CONSUMPTION				PER CAPITA	
	Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010	Growth Rates 89-99 99-2010		Base Period ^{1/}	Projection 2010
	(...000 tonnes...)		(...% per year...)		(...000 tonnes...)		(...% per year...)		(...kg/person...)	
WORLD	78 596	101 374	4.0	2.3	78 113	100 854	3.5	2.4	12.9	14.7
DEVELOPING	41 896	58 978	4.5	3.2	35 682	49 583	6.7	3.0	7.5	9.0
AFRICA	1 568	1 844	2.7	1.5	2 177	3 123	4.3	3.3	2.8	3.1
NORTH AFRICA	181	199	-1.7	0.9	1 016	1 542	3.8	3.9	7.2	9.1
Egypt	111	102	-1.5	-0.7	546	849	7.5	4.1	8.1	10.6
Morocco	48	71	-2.9	3.6	164	242	9.5	3.6	5.9	7.4
SUB-SAHARA	1 387	1 644	3.5	1.6	1 161	1 581	4.6	2.8	1.8	1.9
Côte d'Ivoire	59	64	4.9	0.6	35	45	7.7	2.3	2.4	2.5
Nigeria	298	368	4.3	1.9	253	341	4.2	2.7	2.3	2.5
Ethiopia	53	67	1.1	2.1	52	82	1.7	4.3	0.4	0.5
LATIN AMER. & CARIB.	23 194	35 555	5.5	4.0	8 217	11 436	5.1	3.1	16.1	19.2
CENTRAL AMERICA	251	370	-5.3	3.6	2 225	3 014	6.8	2.8	16.8	19.1
Mexico	209	324	-5.6	4.1	1 889	2 545	6.5	2.7	19.4	22.5
CARIBBEAN	5	5	-15.8	-1.0	317	415	-0.2	2.5	9.0	10.6
Dominican Rep.	2	2	-15.2	-0.2	138	185	5.9	2.7	16.5	19.0
SOUTH AMERICA	22 937	35 181	5.7	4.0	5 675	8 006	4.9	3.2	16.5	20.1
Argentina	8 541	13 815	8.1	4.5	513	694	0.1	2.8	14.0	16.7
Brazil	11 220	17 019	5.0	3.9	3 402	4 909	5.6	3.4	20.3	25.7
Chile	550	910	-3.6	4.7	369	475	11.0	2.3	24.6	27.9
Uruguay	23	29	-1.2	2.2	28	40	9.2	3.3	8.5	11.3
ASIA	17 106	21 551	3.6	2.1	25 269	34 987	7.5	3.0	7.4	8.9
NEAR EAST	692	813	0.7	1.5	2 296	3 291	6.7	3.3	9.2	10.5
Iran Islamic Rep.	111	139	2.0	2.1	479	655	6.4	2.9	7.2	8.5
Saudi Arabia	4	4	3.4	0.0	266	437	7.4	4.6	12.7	15.2
Turkey	420	483	-1.1	1.3	904	1 250	5.9	3.0	13.8	16.4
SOUTH ASIA	6 870	8 742	3.4	2.2	5 704	7 435	3.8	2.4	4.3	4.8
India	6 046	7 781	3.5	2.3	4 701	6 029	3.6	2.3	4.7	5.2
Pakistan	681	808	3.4	1.6	779	1 064	4.7	2.9	5.1	5.3
SOUTH EAST ASIA	9 545	11 996	3.9	2.1	17 269	24 261	9.2	3.1	9.3	11.8
China Mainland	7 650	9 665	4.7	2.1	10 821	15 049	12.3	3.0	8.7	11.2
Korea Rep.	111	111	-4.8	0.0	1 440	1 903	5.2	2.6	31.0	38.1
Laos	9	12	3.4	2.1	8	12	2.3	3.4	1.6	1.7
Malaysia	381	555	4.4	3.5	550	744	5.3	2.8	25.2	28.7
Philippines	145	167	-1.2	1.3	659	1 050	6.3	4.3	8.9	11.6
Singapore			0.0	0.0	27	69	0.0	8.9	7.6	17.7
Thailand	406	411	0.7	0.1	1 368	1 871	9.0	2.9	22.5	28.1
Viet Nam	108	121	12.3	1.0	206	454	21.3	7.5	2.6	5.0
OCEANIA	28	28	4.1	0.1	19	38	8.4	6.7	2.7	4.3
DEVELOPED	34 152	39 300	4.1	1.3	39 172	46 860	2.8	1.6	44.0	50.8
NORTH AMERICA	28 775	33 565	4.9	1.4	15 827	19 478	4.1	1.9	51.5	58.7
Canada	2 035	2 300	7.7	1.1	995	1 460	2.1	3.5	32.3	43.0
United States	26 740	31 265	4.7	1.4	14 831	18 018	4.3	1.8	53.7	60.5
WESTERN EUROPE	4 081	4 259	1.6	0.4	19 040	22 467	2.0	1.5	49.1	57.7
EU(15)	3 761	3 951	1.5	0.4	18 607	22 007	2.0	1.5	49.6	58.6
OCEANIA	548	778	11.9	3.2	273	406	3.6	3.7	12.1	16.4
Australia	527	747	11.6	3.2	236	356	2.3	3.8	12.6	17.3
New Zealand	21	30	27.6	3.7	37	50	22.3	2.6	9.7	11.8
OTHER	748	697	-5.1	-0.6	4 033	4 509	1.5	1.0	23.4	25.5
Japan	436	347	-7.5	-2.1	3 232	3 453	0.9	0.6	25.5	27.1
South Africa	296	334	0.0	1.1	522	652	3.8	2.0	13.1	15.3
TRANSITIONAL	2 549	3 096	-2.8	1.8	3 259	4 411	-7.0	2.8	7.9	10.6
EASTERN EUROPE	1 000	1 150	0.1	1.3	1 844	2 503	-3.4	2.8	15.2	20.8
Hungary	151	169	-0.8	1.0	332	442	-4.4	2.6	33.0	45.9
Poland	199	216	-3.2	0.7	535	705	-2.1	2.5	13.8	18.0
Czech Rep.	136	146	0.0	0.6	247	298	0.0	1.7	24.1	29.6
CIS	1 527	1 919	0.0	2.1	1 343	1 824	0.0	2.8	4.7	6.4
Kazakhstan	39	37	0.0	-0.4	40	52	0.0	2.4	2.5	3.1
Russian Fed.	645	887	0.0	2.9	641	823	0.0	2.3	4.4	5.7
Ukraine	335	441	0.0	2.5	97	246	0.0	8.8	1.9	5.1
BALTIC	21	26	0.0	1.9	72	84	0.0	1.4	9.6	12.0

Basic food and feed crops

Table 2.16. Oilmeals: trade projections

MEALS	IMPORTS				EXPORTS				IMPORT SHARE		EXPORT SHARE	
	Base Period ^{1/}	Projection 2010	Growth Rates 89-99		Base Period ^{1/}	Projection 2010	Growth Rates 89-99		Base Period ^{1/}	Projection 2010	Base Period ^{1/}	Projection 2010
	(...000 tonnes...)	(...% per year...)			(...000 tonnes...)	(...% per year...)			(.....%.....)	(.....%.....)	(.....%.....)	(.....%.....)
WORLD	38 409	50 233	4.5	2.5	37 874	50 281	5.3	2.6	100.0	100.0	100.0	100.0
DEVELOPING	15 946	23 238	11.2	3.5	21 801	32 389	4.8	3.7	41.5	46.3	57.6	64.4
AFRICA	933	1 581	6.0	4.9	324	302	1.2	-0.7	2.4	3.1	0.9	0.6
NORTH AFRICA	847	1 355	5.7	4.4	12	12	9.9	0.0	2.2	2.7	0.0	0.0
Egypt	439	750	12.3	5.0	4	3	3.7	-0.1	1.1	1.5	0.0	0.0
Morocco	124	180	40.1	3.4	8	8	12.9	0.0	0.3	0.4	0.0	0.0
SUB-SAHARA	86	226	9.1	9.2	312	290	1.0	-0.7	0.2	0.4	0.8	0.6
Côte d'Ivoire	2	3	1.5	0.7	27	21	1.9	-2.2	0.0	0.0	0.1	0.0
Nigeria	5	6	5.1	0.8	50	33	5.0	-3.8	0.0	0.0	0.1	0.1
Ethiopia		16	0.0	0.0	1		-9.8	0.0	0.0	0.0	0.0	0.0
LATIN AMER. & CARIB.	4 127	5 250	10.6	2.2	18 905	29 234	6.5	4.0	10.7	10.5	49.9	58.1
CENTRAL AMERICA	2 044	2 668	10.8	2.5	23	23	4.0	-0.1	5.3	5.3	0.1	0.0
Mexico	1 733	2 228	10.6	2.3	6	6	32.1	-0.1	4.5	4.4	0.0	0.0
CARIBBEAN	312	410	0.6	2.5			0.0	0.0	0.8	0.8	0.0	0.0
Dominican Rep.	136	183	7.0	2.7			0.0	0.0	0.4	0.4	0.0	0.0
SOUTH AMERICA	1 771	2 172	13.8	1.9	18 882	29 211	6.5	4.0	4.6	4.3	49.9	58.1
Argentina	213	233	101.1	0.8	8 148	13 290	9.1	4.5	0.6	0.5	21.5	26.4
Brazil	291	325	25.9	1.0	8 047	12 382	5.0	4.0	0.8	0.6	21.2	24.6
Chile	215	232	21.1	0.7	382	660	-5.8	5.1	0.6	0.5	1.0	1.3
Uruguay	24	30	24.5	2.1	18	18	0.9	0.1	0.1	0.1	0.0	0.0
ASIA	10 880	16 391	12.0	3.8	2 556	2 848	-2.4	1.0	28.3	32.6	6.7	5.7
NEAR EAST	1 642	2 507	11.3	3.9	28	28	10.5	-0.1	4.3	5.0	0.1	0.1
Iran Islamic Rep.	369	517	8.3	3.1	1	1	0.0	-0.2	1.0	1.0	0.0	0.0
Saudi Arabia	262	433	7.5	4.7			0.0	-0.1	0.7	0.9	0.0	0.0
Turkey	503	778	25.2	4.0	10	10	-0.3	-0.1	1.3	1.5	0.0	0.0
SOUTH ASIA	214	475	20.2	7.5	1 500	1 778	3.9	1.6	0.6	0.9	4.0	3.5
India	27	29	13.2	0.7	1 488	1 777	4.0	1.6	0.1	0.1	3.9	3.5
Pakistan	95	257	42.1	9.5			-9.4	-0.1	0.2	0.5	0.0	0.0
SOUTH EAST ASIA	9 024	13 409	12.1	3.7	1 027	1 042	-7.4	0.1	23.5	26.7	2.7	2.1
China Mainland	3 847	5 804	30.6	3.8	336	333	-15.0	-0.1	10.0	11.6	0.9	0.7
Korea Rep.	1 348	1 811	7.0	2.7	19	19	19.5	-0.1	3.5	3.6	0.0	0.0
Laos			0.0	31.7	1		0.0	0.0	0.0	0.0	0.0	0.0
Malaysia	467	482	5.3	0.3	296	293	4.2	-0.1	1.2	1.0	0.8	0.6
Philippines	584	983	6.3	4.8	94	94	-2.8	0.0	1.5	2.0	0.2	0.2
Singapore	27	69	0.0	8.9			0.0	0.0	0.1	0.1	0.0	0.0
Thailand	974	1 473	15.2	3.8	13	13	-10.0	0.1	2.5	2.9	0.0	0.0
Viet Nam	139	374	0.0	9.4	42	41	25.9	-0.2	0.4	0.7	0.1	0.1
OCEANIA	6	16	9.7	8.6	15	6	2.0	-8.8	0.0	0.0	0.0	0.0
DEVELOPED	20 723	24 646	2.9	1.6	15 046	16 859	5.7	1.0	54.0	49.1	39.7	33.5
NORTH AMERICA	1 125	1 227	6.8	0.8	13 441	15 117	5.4	1.1	2.9	2.4	35.5	30.1
Canada	553	620	4.0	1.1	1 473	1 457	10.7	-0.1	1.4	1.2	3.9	2.9
United States	572	607	10.5	0.5	11 968	13 660	4.9	1.2	1.5	1.2	31.6	27.2
WESTERN EUROPE	16 120	19 396	2.5	1.7	1 137	1 160	8.4	0.2	42.0	38.6	3.0	2.3
EU(15)	15 762	18 974	2.5	1.7	892	890	9.0	0.0	41.0	37.8	2.4	1.8
OCEANIA	147	164	12.8	1.0	422	536	30.3	2.2	0.4	0.3	1.1	1.1
Australia	111	126	10.9	1.1	403	517	30.3	2.3	0.3	0.3	1.1	1.0
New Zealand	35	38	23.0	0.6	19	19	30.7	0.0	0.1	0.1	0.0	0.0
OTHER	3 331	3 859	3.3	1.3	46	46	-13.8	0.0	8.7	7.7	0.1	0.1
Japan	2 804	3 114	2.8	1.0	8	8	-24.0	0.0	7.3	6.2	0.0	0.0
South Africa	260	353	6.6	2.8	35	35	-7.2	0.0	0.7	0.7	0.1	0.1
TRANSITIONAL	1 740	2 350	-7.0	2.8	1 027	1 033	15.1	0.0	4.5	4.7	2.7	2.1
EASTERN EUROPE	1 331	1 835	-3.1	3.0	499	480	9.0	-0.3	3.5	3.7	1.3	1.0
Hungary	244	348	-4.4	3.3	74	73	11.9	-0.1	0.6	0.7	0.2	0.1
Poland	440	593	-1.6	2.8	104	103	-2.4	-0.1	1.1	1.2	0.3	0.2
Czech Rep.	222	261	0.0	1.5	110	109	0.0	-0.1	0.6	0.5	0.3	0.2
CIS	341	440	0.0	2.3	511	536	0.0	0.4	0.9	0.9	1.3	1.1
Kazakhstan	3	17	0.0	15.6	2	2	0.0	-0.2	0.0	0.0	0.0	0.0
Russian Fed.	211	205	0.0	-0.3	204	269	0.0	2.6	0.5	0.4	0.5	0.5
Ukraine	30	40	0.0	2.6	265	235	0.0	-1.1	0.1	0.1	0.7	0.5
BALTIC	68	74	0.0	0.9	17	17	0.0	-0.2	0.2	0.1	0.0	0.0

1/ 1998-2000 Average

2. LIVESTOCK PRODUCTS

Introduction

The global livestock economy over the past decade has been characterized by the fastest consumption and trade growth of all major agricultural commodities. Growing numbers of quality-conscious urban consumers in developing countries have spurred global demand for meat and dairy products, which has increasingly shifted from bulk meat and dairy product trade to more specific value-added products such as specialized meat cuts. Much of this demand has been met by increased output in developing countries themselves where relatively low feed prices, technology transfers, and increasing vertical integration and concentration have combined to keep prices relatively low for consumers.

Among the major factors that have influenced the global livestock sector over the 1990s, the following were of particular relevance. Many of these factors are expected to continue to shape and influence markets over the next decade:

- *Structural changes in the livestock industries, including improved genetics, animal housing and enhanced management:* In part these changes are a result of growing cross-border technology and investment flows into meat and dairy industries around the globe, particularly in strong growth markets or low-cost production regions. This trend is likely to continue in the future, leading to changing cost structures in industries in developing countries.
- *Changes in policy environment:* Implementation of WTO provisions for both meat and dairy products have led to a reduction in the use of export subsidies and expanding access to various markets. These developments have stimulated trade flows and led to increasing participation of developing countries as exporters in international markets. In addition, the decline or disappearance of state-trading organizations dealing with dairy products in important importing countries, such as Algeria, Mexico and countries in the CIS region, has increased transparency in

international markets. Continued progress toward freer trade on international markets is projected over the current decade, assuming the continuation of existing or announced national agricultural policies affecting these sectors.

- Increased instability in global meat markets as a result of animal disease outbreaks and escalating human health concerns related to BSE and antibiotics in feed. Worldwide import bans on meat from infected geographical areas and heightened border inspections and testing have had distorting effects on the patterns of livestock and meat trade, inducing trade diversion and shifting relative prices among meats. Human and animal health and product quality issues are expected to become more complex over the current decade.

Meat

Production

By 2010, global output of meat is projected to grow to 283 million tonnes, up 60 million tonnes, or 27 percent, over the 1998–2000 base period, with nearly three-quarters of these gains concentrated in developing countries. Although an average annual growth of 2.2 percent in the global meat sector will be possible given technical innovations and restructuring in the poultry and pigmeat sectors, it is slower than the 3 percent average annual gains observed during the 1992–2000 period. In developing countries, meat output is projected to grow 3 percent annually, compared to only 1.2 percent for developed countries. These trends continue the shift in world animal production from developed to developing countries, which has characterized the past 20 years of livestock development, reflecting the changing patterns in demand. By 2010, nearly 80 percent of ruminant animals will be reared in developing countries, while the share of poultry and pigmeat will be slightly less, at 70 percent. Correspondingly, the developing country share of global animal production is projected to increase to 59 percent, up from 54 percent in the base period and 46 percent in 1992.

Livestock products

As during the past decade, the poultry sector will be the most dynamic, growing at an annual rate of 3 percent and generating over 40 percent of the 60 million tonne increase in global meat production. Pigmeat and beef will account for approximately 38 and 17 percent of the remaining output gain, respectively. Developing countries are expected to contribute three-quarters of the 24 million tonne increase in poultry meat output over the projection period and account for 56 of total production by the end of the projection period. Meanwhile, similar trends of increasing concentration and integration of the pigmeat industry with the feed and processing industries in many developing countries, such as China and Brazil, are supporting a 2 percent gain in output to 112 million metric tonnes. Production by developed countries is expected to reach 34 million tonnes by 2010, only 3 million tonnes above the base year level. Capturing three-quarters of the growth in pigmeat production over the projection period, output in developing countries is likely, to reach 70 million tonnes, based on increasing productivity and an expansion in animal slaughtered. This would constitute 63 percent of global output, up from 58 percent in the base period.

Growth in beef and sheepmeat, constrained by the small size of farms and slow growth in technical innovations and restructuring, is projected to increase less than 2 percent over the next decade but at a slighter faster rate than in the previous decade. Developing countries are expected to supply 80 percent of these gains, with the expansion in production projected to rely both on an expansion in slaughtering and on rising average carcass weights stemming from genetic progress and improved management practices. Developing countries would account for the expected 8 out of the 10 million tonne increase in world beef production and the major share of the 3 million tonnes increase in world sheepmeat production. These increases would come particularly from Asia, the largest producing region.

Consumption

Relatively strong economic growth over the projection period is expected to prompt a 2.2 percent annual rise in world meat consumption. In developing countries,

increases in per capita disposable income and the influences of changing dietary habits and food consumption patterns could facilitate meat consumption growth. However, despite projected per capita annual GDP gains of 3.1 percent, aggregate meat consumption in these countries is projected to grow at an annual rate of 2.9 percent, less than half of the rate over the 1990s.¹ Meat consumption gains for developing countries over the projection period will be more than double that in developed countries where already high per capita levels are expected to limit annual gains to 1.2 percent. As a result, developing countries would account for a larger share of global meat consumption, increasing from 47 percent in 1992 to 55 percent in 1999, and an estimated 60 percent in 2010.

In line with historical trends, the share of poultry in total meat consumption would continue to expand at the expense of other meats. Low prices of poultry relative to other meats, widespread consumer perception of poultry as a safer meat, and its acceptability by most cultures and religions are expected to push its share in global meat consumption from 25 percent in 1992 to 32 percent by 2010. Per capita poultry consumption is projected to rise from 11 kg/caput in the base period to 13 kilograms in 2010. Although per capita consumption of pigmeat, projected at 16.3 kg/caput by 2010, would continue to exceed that of poultry, overall consumption growth of 2.1 percent is expected to trail that of poultry. Beef consumption, growing marginally faster than population growth, is set to increase only slightly to 10 kg, while global per capita consumption of sheep and goat meat is projected to rise from 1.8 kg to 2 kg with the increase concentrated in Asian countries. In Africa, per capita consumption of sheep and goat meat, which accounts for more than one-fifth of total meat consumption, is expected to slip marginally to 2.2 kg. However, expectations of higher per capita income in this region will likely increase global consumption of meat to 11.1 kg per capita.

¹ The decline in growth is solely due to slower consumption growth in China in recognition that the Chinese meat consumption data in the 1990s was overestimated. In fact, if China is excluded from the total for developing countries, there is a slight increase in the rate of growth of consumption over the projection period.

Trade

The dynamic growth in global meat trade, stimulated in the 1990s by increased market access provisions, growing meat demand in developing countries and increasing specialization of production/processing operations, is expected to slow from a 7.3 percent annual rate to an average 2.7 percent over the projection period. Nearly half of the meat trade gains witnessed in the 1990s can be attributed to increased imports, mainly of poultry meat, by the Russian Federation and China. This trend is unlikely to be replicated over the projection period.¹

Projected to reach 21 million tonnes in 2010, meat trade is set to rise 5 million tonnes over the base period, more than half of which will be destined for developing countries. Robust meat output gains in developing countries, as well as countries in transition, such as many CIS countries, however, are expected to limit meat imports as a share of global consumption to 7 percent, unchanged from the previous decade.

Growth in the poultry meat trade, while outpacing that of other meats, is expected to slow to 3 percent, which represents a significant decline from the 16 percent gains witnessed over the 1990s when both China and the Russian Federation emerged as major poultry meat markets. While this growth falls short of that witnessed in the 1990s, the favourable relative price and cultural preferences for poultry, combined with increasing specialization of preferred cuts, could push poultry trade up 40 percent to 9.5 million tonnes. In the 1990s, surging poultry meat shipments accounted for more than 70 percent of the gains in global meat trade; however, poultry could account for only half of growth in total meat trade over the projection period. By contrast, gains in pork and beef trade are projected to account for a 20 and 26 percent of the growth in overall trade, respectively.

¹ The decade-long structural decline in the livestock sector in the Russian Federation is expected to slow, with poultry and pigmeat output expected to rise over the projection period.

Corresponding to historical trends, more than 60 percent of the increase in meat import demand over the projection period is expected to stem from developing countries, with Asia as the recipient of nearly half the growth in trade. Strong demand growth in Asia and Central America, Mexico in particular, is projected to push meat imports of developing countries to 10 million tonnes. As a result, the share of global imports of developing countries would rise by 5 percentage points to 46 percentage points. On the export side, in contrast to the previous decade when developed countries, benefiting from favourable natural resource endowments, combined with sophisticated processing and marketing structures, supplied nearly two-thirds of the growth in trade, half of the export gains over the projection period will originate from increasing supplies from developing countries, such as Brazil, Thailand and China. Increasing intensification of poultry and pork production, combined with extensive beef production in land-abundant Latin America, is expected to push up developing country exports to 33 percent of global totals, up from 27 percent in the base period.

World market prices

Given the developments foreseen in the feed markets, assumed economic growth and increases in productivity in the livestock sector, real meat prices are projected to remain below the level of the early 1990s. However, sheepmeat is an exception, with the slight price increase reflecting constraints on the supply side.

Milk and milk products

Production

Milk production is expected to shift from high-cost to low-cost countries, and output growth will increasingly be located in regions with rising demand for milk and milk products; this continues a trend evidenced in the 1990s. As a result, the proportion of world milk production originating in the developing countries is projected to increase. While some developing countries are projected to become more active in export markets, the developing countries as a whole would remain substantial net importers of dairy products.

Livestock products

World production of milk is forecast to rise to 665 million tonnes by 2010, representing an average annual increase of 1.5 percent, compared to an annual average growth rate of 1.0 percent during the 1990s. Milk production is projected to grow in each of the major country groupings (developed, transitional and developing); however, the largest increment is expected in the developing countries. In these countries, output of milk is projected to rise by 71 million tonnes to reach 293 million tonnes. As a consequence, the share of developing countries in world milk production is expected to rise to 44 percent (against 39 percent in the base period and 32 percent at the start of the 1990s). Conversely, while production in the developed countries and that in transition economies is projected to rise, the relative share of world milk production is expected to decrease in both groups.

At the global level, the increase in milk production is anticipated to stem from both an increase in the number of milking animals and higher yields, with most growth coming from higher yield per animal as a result of improved nutrition and breeding. Confirming a trend established in the 1990s, production is projected to rise primarily in the same areas as consumption and in a limited number of low-cost producing countries that are able to export dairy products without the use of subsidies. In particular, in Asia, strong demand is likely to stimulate milk production. In absolute terms, milk output is projected to experience the greatest expansion in India, growing by 27 million tonnes: despite this strong rise, this would imply a slowing of the rate of production growth compared to the 1990s. Other countries in the region will also register substantial increases in milk output, in particular Pakistan and China. Production growth is also projected for the Latin America and Caribbean (LAC) region, where output is expected to rise by 19 million tonnes, a 33 percent increase over the base period, although implying a slower rate of annual growth than in the 1990s. The main driving force behind higher national output in this region will be expansion in domestic demand, most notably in Brazil; however, for some low-cost producing countries in the southern cone, the increase is likely to be export-led. In Africa, milk production is projected to grow at a slower rate than in other developing regions, reflecting difficult economic conditions and, in

some countries, climates that are ill-suited to dairying.

In the developed countries, milk production is expected to rise by 20 million tonnes to reach 267 million tonnes in 2010; average rates of annual growth in milk production would be similar to those in the 1990s. In Oceania, output is projected to increase by 11 million tonnes, or 53 percent, over the projection period in response to demand from abroad. Thus, strong growth in this region experienced during the 1990s will be sustained. In the United States, output will probably increase in line with domestic demand to reach 82 million tonnes by 2010, as in the 1990s. Elsewhere, Canada and Western Europe are assumed to continue imposing production restrictions, and consequently, output of milk would change little over the projection period, representing a continuation of the trend evidenced in the 1990s. In Japan, milk output is not expected to increase, potentially opening the way to some increase in their imports of dairy products. Milk production for transition economies is projected to be 9 million tonnes higher in 2010 than in 1999, mainly as a result of an anticipated increase in output in the CIS. This would be in contrast to the 1990s when production among this group of countries fell sharply following economic reforms and agricultural policy changes.

Consumption

Strongest growth in demand for milk and milk products is anticipated to come from the developing countries, where it is projected to grow at the rate of 2.5 percent per year, broadly comparable with the growth rate during the 1990s. For the countries in transition, little growth (0.9 percent per year) over the 1999 benchmark is projected; however, this would be a substantial improvement over the 1990s, when consumption dropped at an average annual rate of 3.3 percent. In the developed countries, consumption of milk and milk products is also expected to show only limited growth (0.5 percent per year - a similar level to that experienced during the 1990s).

Among the developing countries, as in the 1990s, consumption of milk and milk products is expected to grow most strongly in Asia,

which is projected to account for almost 52 percent of growth in world demand. Significant growth in demand, 18 million tonnes, or 18 percent of the projected rise in the world total, is also expected in the Latin America and Caribbean region. Within this region, Brazil and Mexico are anticipated to see the largest increases in consumption. Africa is expected to register the smallest increase in demand among the developing country regions, as was the case in the 1990s. In many African countries, this will represent a growth rate lower than that of population.

For most developed countries, indications are that the current levels of consumption of milk and milk products are near saturation. Consequently, any growth in consumption is expected to be marginal and mainly associated with changes in the type and form of dairy products consumed and limited population growth - a trend already evident in the previous decade. As a result, while continuing to represent an important share of world consumption in 2010, this group of countries is anticipated to account for only 13 percent of the growth in world demand for milk. The economies in transition are expected to constitute 10 percent of the estimated increase in world demand over the projected period. This would contrast with a fall in total milk consumption experienced during the 1990s.

Trade

At the global level, import demand for dairy products could reach 51 million tonnes in 2010, an increase of 12 million tonnes over the base period, a similar proportional increase to that seen in the 1990s. This would imply that the proportion of total milk traded (excluding EU-intra trade) would remain small – 8 percent of world production.

Approximately 85 percent of the increase in import demand is projected to come from the developing countries, confirming a trend evident during the 1990s. While exports of dairy products from the developing countries are also expected to increase, the projections of consumption and production suggest that as a whole they will face a growing trade deficit in dairy products. While highest growth in import demand is projected for Southeast Asia, imports are anticipated to increase in all developing country regions. However, very

few developing countries will be net exporters of dairy products in 2010, namely Argentina, Chile, Uruguay and India.

The developed countries should continue to account for the bulk of exports of dairy products in 2010 – three-quarters of trade, only a slightly smaller proportion than at the start of the 1990s, when they accounted for 80 percent of world exports. However, a shift in the relative importance of different regions is foreseen: The proportion of world exports supplied by New Zealand and Australia are projected to increase substantially, while those originating in Europe will decrease. There should be little change in the exports supplied by North America. Imports by the developed countries are also expected to remain relatively stable.

For countries in transition, limited growth in milk output and some increase in domestic demand are expected to inhibit export growth, and improvements in domestic processing capacity should act to curtail import demand.

World market prices

International prices for dairy products, measured by an index grouping the single commodities traded, are not expected to increase in real terms over the current decade. However, it is anticipated that even at these price levels, there would be enough income growth in importing countries to stimulate production for export in low-cost milk producing countries.

Issues and uncertainties

Growth in livestock industries around the globe is expected to continue to exceed that of many agricultural commodities. The strongest production and consumption gains are projected in developing countries, while trading patterns would favour low-cost exporters particularly developing countries, reflecting expectations of enhanced on-farm productivity gains and increased specialization in product processing.

Much of the expansion in global livestock industries is expected to come from poultry and pigmeat with the process of vertical integration in these industries. Such integration can facilitate a more efficient conversion of

Livestock products

feed into meat and contribute to an increase in the competitiveness of these industries compared to that of beef and sheepmeat production. Meat output of ruminants is expected to trail that of the other sectors, limited by smaller farms and limited technical innovations. Milk production will grow at a faster rate than in the 1990s, mainly as a result of continued expansion in developing countries and a recovery in output in the countries in transition.

The results of this projection are subject to a number of uncertainties specific to the livestock sector:

- Any changes in the disease status of countries over the projection period would disrupt markets and change the outlook for international livestock markets. In this connection, particular attention will need to be paid by governments to their livestock development strategies, the enhancement of disease surveillance and control measures, as well as biosecurity of livestock operations.
- The progressive reduction of trade barriers since the inception of the Uruguay Round Agreement on Agriculture (URAA) has increasingly heightened the attention focused on trade restrictions due to human and animal health concerns. Escalating food safety concerns related to meat hygiene and safe use of veterinary drugs could lead to divergence from levels projected for the countries included in the model.
- The environmental concerns related to growing intensiveness of livestock production may lead to changes in regulations targeting animal feeding operations and waste management issues in major producing countries. This could shift the comparative advantage of individual countries in the feed/livestock sector in general.
- The adoption of reforms in the CAP will have an impact primarily on the beef sector in European, and potentially, new Member Countries. The decoupling of direct aid will lead to a reduction of beef production with individual countries' competitive position determined by their adoption of either total or partial decoupling. Due to less supply pressure on the markets, producer prices will likely decline as would beef market surpluses.
- Limited increases in milk quotas, combined with a reduction in support prices will likely lead to lower domestic prices in the EU and higher consumption of milk and milk products. Internal EU prices, however, are anticipated to remain above world market levels at the end of the reform period.
- Meanwhile, EU accession with ten new Members in Eastern Europe is expected to lead to a redirection of trade according to the relative competitiveness of the individual Member States. The EC Commission indicates that the poultry and pigmeat sectors will be influenced by (i) growing competitiveness in poultry operations in Eastern Europe due to foreign direct investments into production and processing; and (ii) increasing imports of pigmeat by the same countries driven by uncompetitive feed prices and relatively poor pigmeat quality compared to old Member countries.
- In the dairy sector, new Member Countries have been allocated milk quotas based on recent average annual levels of production. While in the short-term no substantial shifts in production are projected, differing quality standards and marketing expertise will initially lead to a net flow of dairy products from longer-standing Members to new Members.

3. SUGAR, TROPICAL BEVERAGE CROPS AND FRUITS

Sugar

Introduction

The sugar projections were carried out with the help of a multi-region, non-spatial equilibrium model. The model assumes the continuation of current sugar policies and does not hypothesize as to the direction of future policy changes or include an analysis of the potential impact of the Everything-But-Arms (EBA) proposal in the European Union (EU). The principal changes in sugar trade policy of recent years continue to be those commitments made in the Uruguay Round Agreements in regard to the reduction of domestic support and export subsidies, as well as minimum market access for imports and tariff reduction. These changes are accounted for by the model, with no further changes in these commitments envisioned by 2010. Furthermore, as trade policies are typically based on the type of sugar traded (refined and/or raw sugar), the model accounts for the relationship between refined and raw sugar prices and the traded quantities of the differing types of sugar.

Production, consumption and stocks are expressed in raw sugar equivalent, with cane and beet sugar combined in one supply response relationship as necessary to the specific country or region. Demand is expressed by the combination of the direct and indirect uses of sugar, and stock demand equations through combined public and private stocks building. Domestic prices for refined and raw sugar are incorporated (with other variables) in the supply, demand and stocks equations. Ad valorem tariffs link border prices (world prices) to domestic prices. Finally, the model is closed through the usual market clearing condition that the sum of all net trade across all countries and regions, expressed in terms of refined and/or raw sugar, equals zero.

Production

Global sugar production is projected to reach 165 million tonnes by 2010. The projected growth rate of two percent is in line with consumption growth projections and similar to the growth of the 1990s. The baseline period

reflects the chronic surplus overhanging the world sugar market for most of past decade, several seasons of record output in major sugar producing nations, and 14-year lows in world sugar prices. The projected world output would be affected by record production due to better than anticipated yields and efficiency gains in developing countries, particularly Brazil and India.

Developing countries are projected to account for virtually all of the global increase in sugar production, thus raising the share of world production from 67 percent in 1998-00 to 72 percent by the year 2010. Regionally, while Latin America and the Caribbean would continue to play the leading role in raising output, production in Asia is projected to grow 2.5 percent per year, slightly lower than Latin America but higher than the anticipated global average growth rate. Latin America and the Caribbean would account for slightly more than 14 million tonnes of the 30 million tonne increase projected for developing countries, with Asia at 13.5 million tonnes and Africa at 2.4 million tonnes of the projected increase by 2010. India and Brazil would account for 18 and 17 percent of total global production between 1998–2000 and 2010, respectively.

By contrast, developed countries are projected to have marginal growth in sugar production, less than one percent over the period. Production growth is projected to slow slightly in Australia, to 1.4 percent, with steady to slightly increasing growth in South Africa. Output in North America is anticipated to decline as scheduled NAFTA access to the United States sugar market increases over the projections period, given current assumptions of declining NAFTA tariffs that will be eliminated toward the end of the projections period (US fiscal year 2008). Little change in sugar output is anticipated for Western Europe while output in the Commonwealth of Independent States (CIS) in Europe is projected to increase at a higher rate than that of the combined production for other countries in transition.

Sugar, tropical beverage crops and fruits

Consumption

World sugar consumption is projected at slightly above 160 million tonnes, an expansion of nearly 32 million tonnes, between 1998-00 and 2010. The implied annual growth rate of two percent, while slightly more than the growth rate achieved over the past decade, partially reflects assumptions of rising incomes and anticipated shifts in patterns of food consumption throughout the world by 2010 and beyond. Most of the projected growth in global sugar consumption is anticipated in the developing countries, with only marginal increases foreseen in the developed nations. Increasing per capita income levels, particularly in those developing countries with higher population growth rates, as well as shifting food consumption patterns, would support sugar consumption growth to 2010. Rising incomes would be the key driver of sugar consumption growth, particularly as the global population growth rate is anticipated to slow over the next decade.

Developing countries would account for nearly 32 million of the projected 33 million tonne increase in consumption, raising the share of global sugar consumption in those countries to 71 percent by 2010, from nearly 64 percent in the baseline period. Among the developing regions, particularly strong annual growth of 3.4 percent is projected for Asia, followed by Africa (2.9 percent per year), Latin America and the Caribbean (2.3 percent), and Oceania (1.6 percent per year). For the developing nations, the highest growth in sugar consumption is projected for Thailand (5.9 percent per year), followed by India (3.6 percent per year), Pakistan and the Philippines (3.5 percent per year).

Although consumption is expected to marginally increase for the developed countries, the share of global consumption would decline from 36 percent to 29 percent. Growth rates are projected to continue to decline in Japan to 2010, slightly more than the downward trend of the 1990s. The fastest growth in total consumption in the developed regions would be in Australia (3.2 percent per year) while the slowest growth rate is projected for the economies in transition. Among economies in transition, growth of one percent

is projected for the CIS in Europe (the Russian Federation and Ukraine).

International trade and prices

Opportunities, though limited, arising from sugar policy changes to increase market access in recent years, as well as the continued deregulation and privatization of sugar industries throughout the world, may have provided a new impetus to international trade in sugar. Brazil, generally considered to be one of the most competitive sugar producing nations, emerged as the globally dominant sugar exporter in the 1990s. Record output, increasingly higher yields and more efficient production toward the latter part of the 1990s resulted in substantial volumes of sugar exported into the world market and downward price pressures. Brazil is expected to maintain its position as the leading player in the world sugar market over the 1998–2000 to 2010 projection period. It should also show the most substantial increase in net trade among the main exporters, up by 8.2 million tonnes to slightly more than 18 million tonnes in 2010. Net trade from Mexico is projected to increase by nearly 1.1 million tonnes over the same period, primarily due to increasing NAFTA access to the US market. India would emerge as a net exporting nation, with exports projected at more than 600 000 tonnes in 2010. Australia, South Africa and Thailand would also increase net export trade, although at a slower rate for Thailand than in recent years, largely due to strong projected domestic consumption growth, nearly 1.4 million tonnes more by 2005. A similar increase is projected for Australia. Net imports by the United States are projected to increase by 1.5 million tonnes over the projection decade, due to increased market access by Mexico under the NAFTA agreement and potential declines in domestic production.

The bulk of market opportunities for exporters, however, are expected to arise in markets where domestic production cannot keep pace with demand. Regionally, it is projected that net imports into Asia would increase by 7.2 percent a year, with substantial growth in imports projected for China, Pakistan and the Philippines. Net imports by Indonesia are projected to nearly 2.4 million tonnes by 2010, despite domestic policies to increase sugar

production in that country. Among the transition economies in Europe, growth in net exports is projected for Poland, while declining imports are anticipated for the CIS in Europe due to the expected increase in domestic production in these countries.

Although most often tending toward a structural surplus, the world sugar market has historically had recurring supply and demand imbalances, which are reflected in extremely volatile prices in free markets. For most of the past four decades, world production of sugar has been in excess of consumption, pressuring prices downward and resulting in stock building. Periods of deficit production, such as the poorer than anticipated crops due to weather shocks in Brazil and the EU in recent years, resulted in periods of market volatility in which prices rose sharply, followed by equally sharp declines. Since such events and indeed collapses in demand cannot be foreseen in commodity models, price movements in such models tend to be smooth and gradual. The projections in world free market price for raw sugar (nearly 15 US cents per pound) show a significant increase in real terms from the average price level of 8.2 US cents per pound for raw sugar in the base period. Furthermore, the raw to refined price differential (also referred to as “the refining margin”) could increase from 1.8 US cents per pound in the base period to 6.3 US cents per pound by 2010.

However, these price projections from 1998–2000 to 2010 appear to be overly optimistic. As price developments over the past few seasons demonstrate, with the ISA daily price plunging by more than 35 percent - to a 14-year low of 4.78 US cents per pound by the end of April 1999 for raw sugar - price volatility seems set to remain a notable feature of the world sugar market. Price levels for calendar year 2002 are anticipated to average less than 6 US cents per pound, well below the cost of production in most exporting nations.

Issues and uncertainties

Volatility of prices in the free market has been a long-standing feature of international trade in sugar. The 1980s, for instance, opened with a world sugar price spike, with raw prices soaring to 47 US cents per pound versus a long-term average of about 10 cents per pound.

Typically, such price volatility was followed by long periods of relatively depressed prices with occasional declines, to levels below the costs of production in major low-cost exporting countries (average world raw sugar production costs are estimated by LMC to be 16 US cents per pound). World prices remained fairly stable throughout most of the 1990s, declining rapidly toward the end of the decade, as record output, particularly in Brazil, drove greater volumes into export channels and hence, the free sugar market. Increased domestic production in the United States has also resulted in less sugar imported under the preferential tariff rate quota in recent years, with more directed toward the free export market. While it has been long expected that the development and diffusion of alternative sweeteners would help reduce the magnitude of price volatility, this has not been the case to date.

The increasing importance of developing countries in global sugar consumption, with their greater sensitivity of demand to price, has been cited as a possible contributor to the reduced variability of prices for most of the 1990s. However, Brazil’s emergence as the most dominant and competitive exporter in recent years, the economic crises of the late 1990s, and record output in other major producing nations have resulted in a renewed cycle of depressed prices.

Generally, price elasticities of demand for sugar are closely aligned with higher income elasticities. Coupled with the chronic surplus supply and high stocks, reversal of the most recent slump in the free market price may well hinge as much on recovery in the economies affected as on the interaction of short-term supply and demand factors. Further rationalization of global sugar industries may result due to sustained low free market prices, with potentially damaging consequences for investment planning in sugar production and downstream industries.

Another important developmental issue for the future concerns the extent and impact of policy changes in the world sugar economy. In an earlier study of the Impact of the Uruguay Round Agreements on Agriculture (URAA) (FAO 1995), it was concluded that the URAA would induce increases in world sugar

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production, consumption and trade, but that the overall effects would be relatively small. Essentially, the scope for further reductions in market supports implemented through sugar policies remains substantial. Without exploring such hypotheses as further liberalization, some analysis is in order of the consequences of recent policy changes on the part of the world sugar trade that is the subject of preferential arrangements, in particular, the African, Caribbean and Pacific States (ACP). Already in the decade preceding the conclusion of the URAA, the total volume of preferential trade in sugar had declined from about 8 million tonnes to less than 3 million tonnes. Thus, reductions on tariff rates for both raw and white sugar, as agreed in the URAA, would generally have the effect of further reducing the value of preferences on a smaller volume of trade than in earlier years. However, other aspects of the URAA, for example the commitments to reduce the volume of subsidized exports should be of help to preferential suppliers, through impacts on prices in third markets. The projections suggest that in the case of ACP sugar producing/exporting countries, the URAA would raise their export earnings by about 1.2 percent in the short-term. However, this would be almost entirely a trade volume effect as it is projected that the changes in the prices of their preferential and non-preferential sales would be offsetting. In general, for these countries the scenarios explored suggest that their export revenues would benefit more from widespread trade liberalization, which would help to support free market prices, than from, for example, further liberalization limited only to preference-giving countries, which would also have a negative effect on the preferential price.

Conclusions

The world sugar market remains in a period of chronic surplus, as record output in major producing countries surpassed growth in global consumption in recent years. Trade and stocks increased 23 and 26 percent respectively, resulting in global stock building, increased export volumes and sustained downward price pressure. Further discussion of prices over the last decade reveals that world sugar prices declined 17 percent between the first five years of the last decade (1990–1995) and the last five (1996–2001), hitting 14-year lows in early

2000. Exports from Brazil increased nearly 65 percent between the two periods, largely driven by the 62 percent devaluation in the Brazilian real since 1999 and record output and deregulation of the fuel alcohol sector, which encouraged increased export volumes.

Sugar policy reforms have largely been directed at the supply side where instruments have been introduced to reduce inefficiencies and enhance competitiveness of producing countries. Among smaller producers, rationalization of the industry, diversification and exit strategies were explored for the macro-economic impact. As for international trade policies, the only significant development occurred in developing countries where market access increased by 150 000 tonnes and accounted for 90 percent of the increase in concession reached under the first five years of the Uruguay Round.

Recent policy developments have seen virtually unchanged sugar policy in the United States, as codified by the passage of the Farm Security and Investment Act of 2002. Essentially, the US Sugar Program created an incentive for sugar producers in the United States to expand domestic production, which has in turn resulted in import levels at or near the WTO minimum access agreement. This has resulted in some amount of increased global output requiring an export destination in the free market. Moves for further liberalization of the sugar regimes in both the United States and the EU may be stalled given the overall unchanged US sugar policy.

The more significant development has been the EBA initiative, which was introduced by the European Commission to enhance market access by Least Developed Countries (LDCs). However, increased market access for those sugar producing nations that are LDCs will be granted at the expense of the existing ACP quota-holders. Essentially, there is no net gain in market access to the EU, but a redistribution of the SPS quota which ranges from 200 000 to 300 000 tonnes each year. Under the EBA, which came into effect for sugar in 2001, a volume of 74 000 tonnes of sugar (raw equivalent) has been removed from the overall SPS quota and redistributed to LDCs. This base quantity will increase by 15 percent each

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year until 2006 when quotas will be removed altogether.

Implementation of commitments under the URAA had little or no impact on world sugar markets for most of the 1990s. Efforts to address sugar policy reform have not advanced

significantly in either the EU or the United States. Furthermore, recent trends indicate increased use of differential import tariffs and domestic policies to protect national sugar producing industries from lower world sugar prices.

Sugar, tropical beverage crops and fruits

Table 2.23. Sugar: actual and projected production

	ACTUAL		PROJECTED	GROWTH RATES	
	1988-1990 Average	1998-2000 Average	2010	1988-90 to 1998-2000	1998-2000 to 2010
	<i>000 tonnes</i>			<i>Percent per year</i>	
WORLD	109 879	133 045	165 131	1.9	2.0
DEVELOPING	65 479	89 920	120 107	3.2	2.7
AFRICA	5 796	6 905	9 275	1.8	2.7
Egypt	994	1 426	2 323	3.7	4.5
Kenya	459	499	520	0.8	0.4
Mauritius	635	581	689	-0.9	1.6
Swaziland	508	587	700	1.5	1.6
LATIN AMERICA & CARIBBEAN	28 229	38 684	52 911	3.2	2.9
Argentina	1 264	1 732	2 164	3.2	2.0
Brazil	8 116	19 303	30 847	9.1	4.4
Cuba	8 024	3 868	2 313	-7.0	-4.6
Guatemala	861	1 668	2 110	6.8	2.2
Mexico	3 683	4 917	6 598	2.9	2.7
ASIA	31 009	43 935	57 461	3.5	2.5
China	6 509	8 266	8 756	2.4	0.5
India	11 512	18 573	27 188	4.9	3.5
Indonesia	2 245	1 737	2 164	-2.5	2.0
Pakistan	2 043	2 996	3 174	3.9	0.5
Philippines	1 730	1 667	1 869	-0.4	1.0
Thailand	3 871	5 520	7 226	3.6	2.5
Turkey	1 581	2 669	3 704	5.4	3.0
OCEANIA	446	397	459	-1.2	1.3
Fiji	410	351	408	-1.5	1.4
DEVELOPED	44 400	43 125	45 024	-0.3	0.4
NORTH AMERICA	6 249	8 012	7 150	2.5	-1.0
United States	6 124	7 897	6 960	2.6	-1.1
EUROPE	17 214	18 542	19 542	0.7	0.5
EU15	17 054	18 335	19 247	0.7	0.4
TRANSITION MARKETS IN EUROPE	13 959	7 800	9 118	-5.7	1.4
CIS in Europe	9 064	3 439	4 776	-9.2	3.0
Poland	1 978	2 129	2 245	0.7	0.5
OCEANIA	3 785	4 747	5 527	2.3	1.4
Australia	3 785	4 747	5 527	2.3	1.4
OTHER	3 193	3 628	3 580	1.3	-0.1
Japan	965	858	810	-1.2	-0.5
South Africa	2 227	2 770	2 876	2.2	0.3

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Table 2.24. Sugar: actual and projected consumption

	ACTUAL		PROJECTED	GROWTH RATES	
	1988-1990 Average	1998-2000 Average	2010	1988-90 to 1998-2000	1998-2000 to 2010
	<i>000 tonnes</i>			<i>Percent per year</i>	
WORLD	108 718	128 629	160 304	1.7	2.0
DEVELOPING	61 271	82 066	114 047	3.0	3.0
AFRICA	7 718	10 150	13 917	2.8	2.9
Egypt	1 667	2 145	2 800	2.6	2.5
Kenya	514	680	750	2.8	0.9
Mauritius	49	41	44	-1.8	0.6
Swaziland	49	264	369	18.3	3.1
LATIN AMERICA & CARIB.	19 007	22 874	28 377	1.9	2.0
Argentina	1 008	1 532	1 986	4.3	2.4
Brazil	6 935	9 507	12 729	3.2	2.7
Cuba	931	727	687	-2.4	-0.5
Guatemala	345	469	648	3.1	3.0
Mexico	4 176	4 537	5 376	0.8	1.6
ASIA	34 910	48 928	70 617	3.4	3.4
China	7 704	9 564	12 554	2.2	2.5
India	11 108	17 203	25 504	4.5	3.6
Indonesia	2 509	3 369	4 560	3.0	2.8
Pakistan	2 280	3 293	4 786	3.7	3.5
Philippines	1 415	2 019	2 945	3.6	3.5
Thailand	1 056	1 822	3 413	5.6	5.9
Turkey	1 731	1 893	2 475	0.9	2.5
OCEANIA	85	114	136	3.0	1.6
Fiji	39	41	48	0.5	1.4
DEVELOPED	47 447	46 563	47 257	-0.2	0.1
NORTH AMERICA	8 441	10 575	11 012	2.3	0.4
United States	7 470	9 315	9 919	2.2	0.6
EUROPE	14 392	14 927	15 260	0.4	0.2
EU15	13 797	14 242	14 312	0.3	0.0
TRANSITION MARKETS IN EUROPE	19 089	15 211	15 220	-2.2	0.0
CIS in Europe	9 461	8 202	9 168	-1.4	1.0
Poland	1 683	1 754	1 562	0.4	-1.0
OCEANIA	1 015	1 376	1 940	3.1	3.2
Australia	854	1 179	1 661	3.3	3.2
OTHER	4 510	4 361	4 224	-0.3	-0.3
Japan	2 822	2 512	2 070	-1.2	-1.7
South Africa	1 414	1 388	1 675	-0.2	1.7

Sugar, tropical beverage crops and fruits

Table 2.25 - Sugar: actual and projected net trade

	ACTUAL		PROJECTED	GROWTH RATES	
	1988-1990 Average	1998-2000 Average	2010	1988-90 to 1998-2000	1998-2000 to 2010
	<i>000 tonnes</i>			<i>Percent per year</i>	
WORLD	81	2 142	4 826	38.8	7.7
DEVELOPING	3 506	5 922	7 059	5.4	1.6
AFRICA	-1 896	-3 594	-4 642	6.6	2.4
Egypt	- 732	- 885	- 477	1.9	-5.5
Kenya	- 49	- 150	- 230	11.8	4.0
Mauritius	629	499	645	-2.3	2.4
Swaziland	459	267	331	-5.3	2.0
LATIN AMERICA & CARIB.	9 399	15 737	23 034	5.3	3.5
Argentina	258	170	237	-4.1	3.1
Brazil	1 396	10 037	18 276	21.8	5.6
Cuba	7 046	3 132	1 627	-7.8	-5.8
Guatemala	525	1 112	1 469	7.8	2.6
Mexico	- 759	497	1 581	---	11.1
ASIA	-4 372	-6 498	-13 956	4.0	7.2
China	-1 392	- 928	-3 798	-4.0	13.7
India	- 11	- 156	684	30.4	-214.4
Indonesia	- 203	-1 823	-2 396	24.5	2.5
Pakistan	246	- 64	-1 012	---	28.5
Philippines	2 950	- 269	-1 156	---	14.2
Thailand	- 233	3 622	3 813	---	0.5
Turkey	-2 141	506	1 229	---	8.4
OCEANIA	375	277	306	-3.0	0.9
Fiji	379	305	353	-2.1	1.3
DEVELOPED	-3 425	-3 780	-2 233	1.0	-4.7
NORTH AMERICA	-2 404	-2 610	-3 861	0.8	3.6
United States	-1 587	-1 456	-2 959	-0.9	6.7
EUROPE	2 982	3 423	4 482	1.4	2.5
EU15	2 722	3 605	4 935	2.8	2.9
TRANSITION MARKETS IN EUROPE	-5 570	-7 498	-6 103	3.0	-1.9
CIS in Europe	- 519	-4 991	-4 392	25.4	-1.2
Poland	262	418	683	4.8	4.6
OCEANIA	2 769	3 468	3 587	2.3	0.3
Australia	2 934	3 671	3 866	2.3	0.5
OTHER	-1 202	- 841	- 538	-3.5	-4.0
Japan	-1 789	-1 600	-1 260	-1.1	-2.1
South Africa	847	1 216	1 401	3.7	1.3

Coffee***Introduction***

A dynamic model was used to make coffee projections. It covers the major exporting and importing countries of green coffee. Supply, demand and stock functions were estimated for each of the major exporting and importing countries. The model performs dynamic simulation forward in time and generates forecasts on the basis of assumptions for the future behaviour of GDP, consumer price indices and exchange rates. For each year in the future, the International Coffee Organization's composite price is solved in order to achieve equilibrium between supply and demand for green coffee. This model was developed to provide forecasts for green coffee production, consumption and trade, assuming that coffee is treated as a homogeneous commodity with no distinction between Arabica and Robusta varieties.

Production

World coffee production is projected to grow by 0.5 percent annually from 1998–2000 to 2010, compared to 1.9 percent of the previous decade. Global output is expected to reach 7.0 million tonnes (117 million bags) by 2010 compared to 6.7 million tonnes (111 million bags) in 1998–2000.

The world's largest coffee producing region is likely to continue to be Latin America and the Caribbean, although the projected annual growth rate for the region is expected to decrease from 1.7 percent in the previous decade to 0.4 percent annually during the projection period. Its output is projected at 4.0 million tonnes (67 million bags) by 2010, compared to 4.2 million tonnes (70 million bags) in 1998–2000. Coffee production in Brazil in 2010 is expected to decrease to 1.3 million tonnes (22 million bags), compared to 2.1 million tonnes (35 million bags) in 1998–2000. In Brazil, improved prices from the mid-1990s stimulated planting and replanting after a period of decline when growers responded to lower prices by reducing the use of agricultural inputs and uprooting plants in marginal areas. In Colombia, based on the age profile of the coffee areas, output is projected to grow at an annual rate of 0.7 percent to 2010 to reach

747 000 tonnes (13 million bags), compared to 699 000 tonnes (12 million bags) in 1998–2000. Some plantings took place during the 1990s in response to the surge in demand for Colombian Milds, which fetch premium prices over other Arabicas.

In Central America, output in Mexico in 2010 is expected to reach 273 000 tonnes (5 million bags), more or less the same as the base period. In Guatemala, the projected annual growth rate of 1.7 percent would take production to 348 000 tonnes (6 million bags) by 2010. A growth rate of 3.9 percent for El Salvador is likely to bring their output to 165 000 tonnes (3 million bags) by 2010, while Costa Rica should experience an increase of 4.2 percent that brings output to 194 000 tonnes (3 million bags).

In Africa, coffee production is expected to increase by 1.5 percent annually from the base period to 2010, mostly reflecting increases in yields rather than an expansion in area. Output is anticipated to increase from 961 000 tonnes (16 million bags) in 1998–2000 to 1.1 million tonnes (19 million bags) by the year 2010. Production in Ethiopia, the largest Arabica coffee producing country in Africa, is expected to expand by 1.6 percent annually to reach 207 000 tonnes (3 million bags) by 2010. Coffee output in Côte d'Ivoire is expected to increase by 3.8 percent per annum, which would likely bring its output to 217 000 tonnes (3.6 million bags) by 2010. The output in Uganda is projected to increase at a rate of 0.7 percent annually from 1998–2000 to 2010. Output may rise to 222 000 tonnes (4 million bags) by 2010 from 207 000 tonnes (3 million bags) in 1998–2000, through replanting and higher yields. Kenya, the African producer of Colombian Milds, is projected to expand output by 1.1 percent annually during the projection period to arrive at 88 000 tonnes (1.5 million bags).

Production in Asia is projected to grow by 2.1 percent annually to reach 1.7 million tonnes (29 million bags) by 2010. Much of the expansion is expected to occur in Indonesia, the largest producing country in the region. Its coffee production expanded rapidly during the 1970s, slowed in the 1990s and is projected to expand at a growth rate of 1.7 percent annually to 2010 when output is likely to reach 654 000

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tonnes (11 million bags). Also, in India output is projected to rise at 3.1 percent annually to reach 409 000 tonnes (7 million bags) by 2010. An increase of 2.0 percent per annum is expected in Viet Nam, where output could reach 561 000 tonnes (9 million bags) by 2010. An annual increase of 0.7 percent is expected for Thailand, where output is projected to reach 59 000 tonnes (1 million bags) by 2010.

In Oceania, Papua New Guinea is the only significant producing country. Its production has been relatively stable during the 1980s and its output in 2010 is estimated at 150 000 tonnes (3 million bags).

Consumption

World consumption of coffee is projected to increase by 0.4 percent annually from 6.7 million tonnes (111 million bags) in 1998–2000 to 6.9 million tonnes (117 million bags) in 2010.

Coffee consumption in developing countries is projected to grow from 1.7 million tonnes (29 million bags) in 1998–2000 to 1.9 million tonnes (32 million bags) in 2010, at an annual rate of 1.3 percent, while their share in the world market is expected to increase from 26 percent in the base period to 28 percent in 2010. The projected higher growth rate for developing countries compared to developed countries is due mainly to higher income and population growth in developing countries, with increased coffee consumption continuing to be concentrated in the major coffee producing countries.

Developed countries, including countries in transition, are likely to continue to account for the larger, though slightly declining, share of world coffee consumption. In the base period their share of consumption was 74 percent, nearly 5 million tonnes (83 million bags), compared with 72 percent projected for 2010. Coffee consumption in developed countries is projected to grow by 0.1 percent annually to 5.0 million tonnes (83 million bags) by 2010. In Europe, demand for coffee is projected to increase by 0.4 percent per year to 3.1 million tonnes (51 million bags) by 2010. The European Community (EC) is projected to account for 2.2 million tonnes (36 million bags), or 68 percent of total consumption in

Europe. Demand is expected to rise slightly in the EC, but growth in consumption in the rest of Europe, excluding the former Soviet Union/CIS, is expected to show a slight decline. Growth in the former Soviet Union/CIS is expected to be more or less the same as in the base period. In North America demand is projected to decrease by 1.0 percent per year, mainly reflecting income and population growth in the region.

Trade

In 2010, global coffee net-exports is projected to reach 5.5 million tonnes (92 million bags). Latin America and the Caribbean, with an export of 2.9 million tonnes (48 million bags), is expected to continue to be the leading exporting region, although there will be a decline in the net-exports of 0.5 percent annually. By contrast, in Africa there will be a net export increase at a rate of 1.6 percent annually, reaching 1.0 million tonnes (17 million bags) and accounting for a 18 percent share of global exports. In Asia, export availabilities are expected to grow to 1.5 million tonnes (24 million bags) in 2010, accounting for 27 percent of world coffee exports. Export availabilities from Oceania are estimated to increase by 7.3 percent, reaching 150 000 tonnes (2.5 million bags), about 3.0 percent of global export availabilities.

World coffee imports are expected to increase by 0.2 percent annually during the projection period to reach 5.5 million tonnes (92 million bags) by 2010. This compares with average imports of 5.4 million tonnes (90 million bags) in 1998–2000. Imports by developing countries are projected to reach 421 000 tonnes (7 million bags) in 2010, accounting for less than 8 percent of the world's total and similar to their share in 1998–2000. Reflecting the slower growth of consumption, import requirements of the developed countries are projected to grow at an annual rate of 0.1 percent, reaching 5.1 million tonnes (85 million bags) by 2010 and accounting for 92 percent of the global total. Import demand by North America is projected to decline moderately to 1.54 million tonnes (26 million bags) by 2010. Imports into Europe are projected to decrease marginally to 2.96 million tonnes (49 million bags) by 2010. Imports to Japan are projected to grow at

1.6 percent annually reaching 460 000 tonnes (7.7 million bags). Growth in import demand by the former Soviet Union/CIS, where consumption in soluble form has grown but no processing firm has been established in the area, is expected to remain low at less than one percent per annum during the projection period.

Issues and uncertainties

The result of the projections indicates that global green coffee demand and supply would continue to grow, although at a rate slower than in the previous decade, and be almost in balance at around 7 million tonnes by 2010. The projections indicate that several major changes would take place in the world coffee market to 2010. First, most production growth would come from Asia and Africa, instead of Latin America where most coffee had been produced. Second, the growth of consumption would be faster in developing countries than in developed countries, in contrast to the trend over the previous decade. Part of the growth in consumption in developing countries would

come from the increase within the producing countries, and partially because of this, international trade would grow slower. This scenario, however, is subject to sudden and substantial changes in the world coffee economy.

Recent price crises have had an important implication for the world coffee economy. The price crisis, which has adversely and seriously affected incomes of all coffee producers, hit some producers more severely than others due to differences in various economic factors such as production cost and exchange rates. These variations may change the relative competitiveness among the exporters, and could therefore alter the pattern of the world coffee trade. In addition, various international initiatives are expected to take place as the exporters underline the importance of promoting higher quality coffee with the aim of improving prices through boosting consumption. All these factors may affect the demand and supply conditions in the world coffee markets to 2010 although the price would continue to be the primary determinant.

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Table 2.26. Coffee: actual and projected production

	ACTUAL		PROJECTED	GROWTH RATES	
	1988-1990 Average	1998-2000 Average *	2010	1988-90 to 1998-2000	1998-2000 to 2010
	<i>000 tonnes</i>			<i>Percent per year</i>	
WORLD	5 559	6 688	7 033	1.9	0.5
DEVELOPING	5 559	6 688	7 033	1.9	0.5
AFRICA	1 139	961	1 114	-1.7	1.5
Cameroon	112	99	124	-1.2	2.2
Côte d'Ivoire	232	149	217	-4.3	3.8
Ethiopia	181	177	207	-0.2	1.6
Kenya	89	79	88	-1.2	1.1
Uganda	143	207	222	3.8	0.7
Others	383	251	257	-4.1	0.2
ASIA	778	1 413	1 732	6.1	2.1
India	153	300	409	7.0	3.1
Indonesia	422	554	654	2.8	1.7
Philippines	70	43	48	-4.9	1.3
Thailand	60	55	59	-0.9	0.7
Viet Nam	69	459	561	20.9	2.0
Others	5	2	1	-8.3	-5.9
LATIN AMER. & CARIB.	3 577	4 215	4 037	1.7	-0.4
Brazil	1 496	2 103	1 339	3.5	-4.4
Colombia	754	699	747	-0.8	0.7
Costa Rica	145	128	194	-1.2	4.2
El Salvador	135	112	165	-1.9	3.9
Guatemala	195	293	348	4.2	1.7
Mexico	315	276	273	-1.3	-0.1
Others	538	604	970	1.2	4.8
OCEANIA	65	100	150	4.4	4.2
Papua New Guinea	65	100	150	4.4	4.2

(*) data for 1999 and 2000 partly estimated

Table 2.27. Coffee: actual and projected consumption

	ACTUAL		PROJECTED	GROWTH RATES	
	1988-1990 Average	1998-2000 Average *	2010	1988-90 to 1998-2000	1998-2000 to 2010
	<i>000 tonnes</i>			<i>Percent per year</i>	
WORLD	5 709	6 681	6 947	1.6	0.4
DEVELOPING	1 627	1 710	1 951	0.5	1.3
AFRICA	212	156	169	-3.0	0.8
Cameroon	5	6	18	2.3	11.2
Côte d'Ivoire	3	3	2	0.0	-2.4
Ethiopia	71	99	87	3.3	-1.3
Kenya	5	3	4	-4.8	3.7
Uganda	4	30	17	21.8	-5.3
Others	123	15	40	-19.0	10.3
ASIA	239	334	416	3.4	2.2
India	52	56	96	0.8	5.5
Indonesia	73	122	111	5.3	-0.9
Philippines	39	49	60	2.2	2.0
Thailand	10	28	42	10.8	4.0
Viet Nam	9	15	26	5.9	5.4
Others	56	63	82	1.2	2.7
LATIN AMER. & CARIB.	933	1 219	1 365	2.7	1.1
Brazil	540	858	1 025	4.7	1.8
Colombia	83	96	92	1.5	-0.5
Costa Rica	23	14	11	-4.9	-2.5
El Salvador	11	12	18	1.0	4.3
Guatemala	18	18	17	0.1	-0.8
Mexico	93	67	53	-3.2	-2.4
Others	166	154	150	-0.7	-0.3
OCEANIA				-12.9	0.0
Papua New Guinea				-12.9	0.0
DEVELOPED	4 083	4 972	4 997	2.0	0.1
NORTH AMERICA	1 203	1 504	1 362	2.3	-1.0
Canada	45	206	208	16.4	0.1
United States	1 157	1 299	1 154	1.2	-1.2
EUROPE	2 541	2 974	3 087	1.6	0.4
EC	2 000	2 059	2 177	0.3	0.6
France	367	394	424	0.7	0.7
Germany	758	838	878	1.0	0.5
Other Europe	541	915	910	5.4	-0.1
Former USSR/CIS	1			-6.5	0.0
OTHER DEVELOPED	338	493	547	3.8	1.1
Australia	15	56	57	14.1	0.2
Israel	5	31	31	18.8	0.2
Japan	309	373	426	1.9	1.3
New Zealand	3	11	11	15.6	0.0
South Africa	6	21	21	14.0	0.0

(*) data for 1999 and 2000 partly estimated

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Table 2.28. Coffee: actual and projected international trade

	EXPORTS					IMPORTS				
	Actual		Projected	Growth rates		Actual		Projected	Growth rates	
	1988-1990 Average	1998-2000 Average *	2010	1988-90 to 1998-2000	1998-2000 to 2010	1988-1990 Average	1998-2000 Average *	2010	1988-90 to 1998-2000	1998-2000 to 2010
	<i>000 tonnes</i>			<i>Percent per year</i>		<i>000 tonnes</i>			<i>Percent per year</i>	
WORLD	4 455	5 207	5 510	1.6	0.6	4 688	5 419	5 510	1.5	0.2
DEVELOPING	4 455	5 207	5 510	1.6	0.6	314	381	421	2.0	1.0
AFRICA	927	849	996	-0.9	1.6	109	170	188	4.5	1.0
Cameroon	114	69	106	-4.9	4.4					
Côte d'Ivoire	209	247	222	1.7	-1.1					
Ethiopia	73	104	119	3.6	1.4					
Kenya	107	70	79	-4.2	1.2					
Uganda	151	185	245	2.1	2.8					
Others	273	174	225	-4.4	2.6					
ASIA	604	1 248	1 471	7.5	1.7	167	172	195	0.3	1.3
India	109	233	325	7.9	3.4					
Indonesia	369	318	557	-1.5	5.8					
Thailand	47	51	40	0.8	-2.4					
Viet Nam	59	641	540	26.9	-1.7					
Others	20	5	9	-12.9	6.1					
LATIN AMER. & CARIB.	2 861	3 036	2 893	0.6	-0.5	38	39	38	0.3	-0.3
Brazil	1 064	1 217	481	1.4	-8.9					
Colombia	724	575	648	-2.3	1.2					
Costa Rica	139	124	186	-1.1	4.1					
El Salvador	126	120	148	-0.5	2.1					
Guatemala	183	278	339	4.3	2.0					
Mexico	233	259	241	1.1	-0.7					
Others	392	463	850	1.7	6.3					
Oceania	63	74	150	1.6	7.3					
Papua New Guinea	63	74	150	1.6	7.3					
DEVELOPED						4 374	5 038	5 089	1.4	0.1
NORTH AMERICA						1 303	1 554	1 543	1.8	-0.1
Canada						129	201	243	4.5	1.9
United States						1 174	1 353	1 300	1.4	-0.4
EUROPE						2 666	2 973	2 957	1.1	-0.1
EC						2 043	2 059	2 035	0.1	-0.1
France						369	398	399	0.8	0.0
Germany						778	852	860	0.9	0.1
Other Europe						623	914	922	3.9	0.1
OTHER DEVELOPED						405	511	589	2.4	1.4
Australia						44	57	65	2.6	1.3
Israel						19	27	30	3.6	1.1
Japan						319	394	460	2.1	1.6
New Zealand						7	11	13	4.6	1.7
South Africa						16	22	21	3.2	-0.5

(*) data for 1999 and 2000 partly estimated

Cocoa

Introduction

The projections employed dynamic time series models to analyse the world cocoa economy. Essentially, autoregressive distributed lag models were used to capture the dynamic process of market adjustment in the world cocoa bean market. The forecasts are obtained from *s*-step *a*-head ADL models, where “*s*” is the forecast horizon. International cocoa prices were included as exogenous factors. Their values over the forecast horizon were obtained from their autoregressive representations. Projections were based on the assumption of normal weather conditions, and a continuation of the past trends in yields, planted areas, population and income growth. Adjustments were made to reflect current policies and future market prospects. The forecasting models captured cycles and trends in the world cocoa beans market to a satisfactory level.

Production

World cocoa production is projected to grow at a rate of 2.2 percent a year, from 1998–2000 to 2010, compared with the 1.7 percent growth during the previous decade, and reach 3.7 million tonnes. During the same period, Africa’s share in the global production is expected to decrease slightly from 69 percent to 68 percent, while the share of the Far East is projected to remain at 18 percent and that of Latin America and the Caribbean at 14 percent.

Africa is expected to remain the world's leading cocoa producing area over the next decade. Production in Côte d'Ivoire, the world's largest cocoa bean producer, should grow by 2.3 percent a year from 1.2 million tonnes of the base period to 1.6 million tonnes in 2010, and account for 44 percent of global cocoa production due mainly to the increased foreign direct investment followed by the market liberalization. Yields in Côte d'Ivoire are well below levels seen in Asia partly because of less use of agricultural inputs. However, the recent surge in world cocoa prices has made it easier for the growers to use more inputs. If this trend continues, volume of cocoa produced in Côte d'Ivoire could increase further. Output in Ghana, the second largest

cocoa bean producer in Africa, would grow from 410 000 tonnes in 1998–2000 to 490 000 tonnes in 2010, an annual average growth rate of 1.6 percent. The corresponding growth rate for the previous decade was 3.3 percent. The lower projected growth rate over the next decade would result from the outbreak of diseases (such as swollen shoot virus, black pod and mirids), increased competition at the world market and low export prices. Over the same period, Nigeria and Cameroon are projected to increase outputs by 1.4 percent and 0.3 percent, respectively.

Cocoa production in Latin America is projected to increase from 397 000 tonnes during the base period to 520 000 tonnes in 2010, an annual growth rate of 2.5 percent. Outputs in Brazil, the largest cocoa bean producer in the region, and Colombia, the third largest, are expected to fall, but an increase in outputs in other cocoa producing countries in the region would more than offset the decline. Output in Brazil is projected to increase by 2.2 percent annually and reach 180 000 tonnes by 2010. The production and yields of cocoa beans in Brazil have decreased during the previous decade because of the detrimental production loss caused by witches' broom disease. The recently found [discovered?] use of new varieties would not bring the production back to the level achieved during the 1980s, because some producers have already switched to alternative crops, discouraged by the recent low world prices. During the same period, output in Ecuador, the second largest cocoa bean producer in Latin America, would increase by 0.8 percent annually and reach 94 000 tonnes. Ecuador has successfully used a new variety resistance to the witches' broom disease, which had also affected their cocoa production areas. However, growth is expected to be only slight because of the increasing costs of production and lower returns to growers. In Colombia, outputs are projected to fall by 3.1 percent per annum. On the other hand, outputs in Dominican Republic and Mexico are expected to grow by 1.8 percent and 0.5 percent, respectively.

In the Far East, production had grown rapidly over the past two decades, and this growth is likely to continue. Production in the Far East is projected to grow by 2.7 percent per year from

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509 000 tonnes during the base period to 680 000 tonnes in 2010 reflecting the expected improvement in yields. The Far East is expected to replace Latin America and the Caribbean as the second largest cocoa producing region by 2010. Most of the production growth in Asia would come from Indonesia, the world's third largest cocoa bean producer after Côte d'Ivoire and Ghana. Production in Indonesia is projected to grow by 3.5 percent annually to 574 000 tonnes in 2010 and account for 16 percent of the global production by 2010, compared to 14 percent in 1998–2000. In Indonesia, the Government policies had encouraged expansion of production, and most of the increases during the last two decades were bulk cocoa coming from hybrid trees. While the expansion of production area in Indonesia has slowed since the late 1990s, yields in the country are still the highest among major cocoa producing countries. A close link between the world market prices and the producer prices in Indonesia also contributed to the country's high yields. Since the growers earn a high proportion of the market prices, they can invest in inputs, which in turn results in improvement in yields. Production in Malaysia, where expansions of urban areas and real estate development have reduced cocoa producing areas, is projected to fall by 1.7 percent annually and reach 43 000 by 2010. The downward trend has been observed since the early 1990s when the outbreak of disease coincided with the deterioration of country's macro-economic conditions. In addition, farmers switched to production from cocoa to more lucrative crops, such as palm oil, in response to the fall in world cocoa prices during the 1990s. Therefore, outputs in Malaysia are unlikely to rebound to the level achieved a couple of decades ago

Consumption

In 2010 world grindings of cocoa beans, a proxy for world cocoa consumption, would amount to 3.6 million tonnes, reflecting an average annual increase of 2.1 percent from 2.8 million tonnes during the base period. Consumption will continue to be concentrated in developed countries, which are expected to account for 64 percent of world cocoa consumption in 2010. Consumption in these countries is projected to increase at an annual

rate of 2.2 percent from 1.8 million tonnes during the base period to 2.3 million tonnes in 2010.

Consumption in Europe is projected to grow by 1.7 percent per annum and reach 1.4 million tonnes. Europe is likely to continue to be the world's largest cocoa consuming area, accounting for 40 percent of global cocoa consumption in 2010. Chocolate and cocoa based products in the EU are currently governed by a 2000 directive which authorises the replacement of cocoa butter by less expensive cocoa butter substitutes up to 5 of the total weight of the finished product. Under the Directive, chocolate products that contain vegetable fats other than cocoa butter may be marketed in the EU provided that their labelling is supplemented by a statement. Member countries have until August 2003 to implement national laws to enforce this directive. Consumption in North America, the world's second largest cocoa consuming area, is likely to grow by 3.6 percent per annum and reach 703 000 tonnes. In the former Soviet Union/CIS, consumption is expected to grow by 0.8 percent per annum from 65 000 tonnes to 71 000 tonnes, reflecting expected increase in income in these countries. In Japan, consumption is expected to increase from 48 000 tonnes during the base period to 56 000 tonnes in 2010.

Consumption in developing countries as a group is expected to amount to 1.3 million tonnes by 2010, an annual growth rate of 1.8 percent. Africa, where capital formation for grindings has grown rapidly over the past decade, will remain the largest consuming region in this group, accounting for 35 percent of the consumption of developing countries. The share of consumption in Latin America and Caribbean, where the relative cost for grindings are higher compared to Africa, is expected to decrease from 32 percent to 28 percent. In the Far East, where per capita consumption is still small, the share in consumption is projected to increase from 31 percent during the same period to 34 percent by 2010.

Trade

By 2010 the world cocoa market is expected to be approximately in balance. Beans will

continue to form the large majority of cocoa exports, despite some increase of processing capacity in producing countries, especially those in Africa. Global cocoa bean exports are projected to reach 3.0 million tonnes by 2010, an average annual growth rate of 2.8 percent. Total exports from Africa are expected to grow by 2.8 percent annually from 1.7 million tonnes during the base period to 2.3 million tonnes in 2010, with Côte d'Ivoire, Ghana and Nigeria achieving an annual average growth rate of about 3 percent. Exports from Côte d'Ivoire are projected to increase to 1.5 million tonnes by 2010, or 51 percent of the global cocoa exports, although this growth is subject to the development of its current political instability. Exports from Ghana would reach 469 000 tonnes or 16 percent of the world total. The share of African exports in the world market is expected to remain stable, about 78 percent of the global exports.

Exports from the Far East, which increased rapidly during the 1980s and continued to grow at a lower rate during the 1990s, are expected to grow further and reach 529 000 tonnes by 2010. The increase in the Far East during the 1980s resulted mainly from rapidly growing shipments from Malaysia that accounted for 54 percent of the exports from the region. However, exports fell dramatically during the 1990s when farmers switched production. The increase in exports during the current decade is likely to result mostly from the increase in yields, and the share of the Malaysian exports in the region should increase only slightly, from 4.6 percent during the base period to 5.3 percent in 2010. On the other hand, exports from Indonesia grew rapidly during the 1980s and 1990s and are projected to continue to grow at 4.3 percent per year over the next decade and account for 98 percent of cocoa bean exports from the Far East by 2010, compared to 30 percent during the 1980s and 84 percent during the 1990s.

In Latin America and the Caribbean, cocoa exports are projected to increase from 97 000 tonnes during the base period to 130 000 tonnes reflecting increased exports from Brazil where production is expected to recover from the loss caused by the witches' broom disease.

Global cocoa imports are expected to increase by 2.2 percent annually between 1998–2000

and 2010, compared with 3.1 percent during the previous decade. Imports in developed countries as a group are expected to grow at an annual rate of 2.5 percent to 2.6 million tonnes. Europe should continue to be the main consumer of cocoa, accounting for 65 percent of global cocoa imports in 2010. In North America, imports are projected to grow by 0.3 percent per year, to reach 505 000 tonnes by 2010. Shipments to the countries of the former Soviet Union/the Commonwealth of Independent States (CIS) are likely to decrease slightly by 1.1 percent per annum. In Japan, imports are expected to increase by 1.4 percent per year from 48 000 tonnes in 1998–2000 to 56 000 tonnes in 2010. Imports in developing countries as a group are projected to remain unchanged and would account for 11.3 percent of world cocoa imports, compared with the 14 percent during the previous decade.

Issues and uncertainties

The projections show an approximate balance in the world cocoa economy by 2010. However, in any single year, the size of a surplus or deficit continues to depend on weather conditions, market prices and changes in the level of stocks. Analysis on market prospects to 2010 suggests that global cocoa trade will continue to expand. However, the rate of expansion would be slower compared to the previous decade constrained by lower consumption growth in most of the major markets. Prices of cocoa beans in 2000/2001 were at their lowest levels in three decades, mainly due to a fundamental oversupply. Although some recovery in cocoa prices has occurred since mid-2001 as a result of the combination of reduced world cocoa bean production and increased speculative buying, prices of cocoa are not likely to improve significantly in the medium term, with low consumption expansion and steady production growth.

In the period to 2010, cocoa exports from developing countries would continue to be mainly in the form of beans. This suggests that the benefits of cocoa processing in adding value will continue to be enjoyed mainly by the importing countries. Cocoa producing countries have been aware of the need for developing the local grindings of beans to add value to their exports. Some African countries

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have increased their local processing capacity by providing subsidy, but most producing countries have not yet been able to increase the value addition to their exports. A major obstacle hindering the local processing of beans has not been the processing capacity itself, but the high degree of vertical integration of the multinational firms in the cocoa and chocolate industry, most of which

have traditionally been established in importing countries. What the producing countries need most are efficient and sophisticated marketing skills. Unless this issue is solved, the benefit of value addition will continue to be distributed mostly among traditional bean importing countries while income of farmers would stay low.

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Table 2.29. Cocoa: actual and projected production

	ACTUAL		PROJECTED	GROWTH RATES	
	1988-1990 Average	1998-2000 Average	2010	1988-90 to 1998-2000	1998-2000 to 2010
	<i>000 tonnes</i>			<i>Percent per year</i>	
WORLD	2 460	2 905	3 700	1.7	2.2
DEVELOPING	2 460	2 905	3 700	1.7	2.2
AFRICA	1 414	1 999	2 500	3.5	2.1
Cameroon	123	125	129	0.2	0.3
Côte d'Ivoire	793	1 249	1 610	4.6	2.3
Ghana	296	410	490	3.3	1.6
Nigeria	160	181	212	1.2	1.4
Others	42	34	59	-2.1	5.1
LATIN AMER. & CARIB.	629	397	520	-4.5	2.5
Brazil	347	141	180	-8.6	2.2
Colombia	51	38	27	-2.9	-3.1
Dominican Rep.	48	36	44	-2.8	1.8
Ecuador	95	86	94	-1.0	0.8
Mexico	43	35	37	-2.0	0.5
Others	45	61	138	3.1	7.7
FAR EAST	417	509	680	2.0	2.7
Indonesia	118	395	574	12.8	3.5
Malaysia	230	52	43	-13.8	-1.7
Papua New Guinea	41	40	45	-0.2	1.1
Others	28	22	18	-2.4	-1.8

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Table 2.30. Cocoa: actual and projected consumption

	ACTUAL		PROJECTED	GROWTH RATES	
	1988-1990 Average	1998-2000 Average	2010	1988-90 to 1998-2000	1998-2000 to 2010
	<i>000 tonnes</i>			<i>Percent per year</i>	
WORLD	2 164	2 833	3 554	2.7	2.1
DEVELOPING	787	1 053	1 284	3.0	1.8
AFRICA	180	366	450	7.4	1.9
Latin America	400	338	356	-1.7	0.5
Brazil	235	200	212	-1.6	0.5
Colombia	44	37	41	-1.7	0.9
Mexico	42	32	32	-2.7	0.0
Ecuador	40	36	35	-1.0	-0.3
Others	39	33	36	-1.7	0.8
Near East	5	27	44	18.4	4.5
FAR EAST	202	322	434	4.8	2.8
DEVELOPED	1 377	1 780	2 270	2.6	2.2
NORTH AMERICA	285	476	703	5.3	3.6
Canada	23	48	69	7.6	3.4
United States	262	428	634	5.0	3.6
EUROPE	916	1 186	1 433	2.6	1.7
EC	816	1 095	1 348	3.0	1.9
Austria	14	19	27		
Belgium/Luxembourg	44	54	68	2.1	2.1
Denmark	2	11	11	18.6	0.0
France	59	137	224	8.8	4.6
Germany	282	212	235	-2.8	0.9
Italy	51	67	72	2.8	0.7
Netherlands	247	432	500	5.7	1.3
Spain	42	56	70	2.9	2.0
United Kingdom	126	167	134	2.9	-2.0
Other Europe	100	91	85	-0.9	-0.6
Switzerland	24	35	29	3.8	-1.7
Poland	22	35	37	4.8	0.5
Former USSR	130	65	71	-6.7	0.8
OTHER DEVELOPED	46	53	63	1.4	1.6
Japan	46	48	56	0.4	1.4

Sugar, tropical beverage crops and fruits

Table 2.31. Cocoa: actual and projected international trade

	EXPORTS					IMPORTS				
	Actual		Projected	Growth rates		Actual		Projected	Growth rates	
	1988-1990 Average	1998-2000 Average	2010	1988-90 to 1998-2000	1998-2000 to 2010	1988-1990	1998-2000	2010	1988-90 to	1998-2000
WORLD	1 765	2 220	2 994	2.3	2.8	1 723	2 337	2 961	3.1	2.2
DEVELOPING	1 765	2 220	2 994	2.3	2.8	176	334	334	6.6	0.0
AFRICA	1 225	1 731	2 335	3.5	2.8	2	4	9	7.1	0.0
Côte d'Ivoire	694	1 115	1 540	4.8	3.0					
Ghana	251	340	469	3.1	3.0					
Nigeria	143	148	202	0.3	2.9					
Cameroon	96	95	97	-0.2	0.2					
LATIN AMER. & CARIB.	236	97	130	-8.5	2.7	7	70	29	25.7	-7.7
Brazil	112	3	23	-30.4	20.3		61	14		-12.5
Colombia	6			-23.8			1	2		4.5
Ecuador	57	48	43	-1.8	-1.0			2		
Mexico	1	2		7.9			4	8		5.9
Other Latin Amer.	61	46	64	-2.8	3.1	7	1	5	-15.6	13.0
NEAR EAST						5	31	29	21.0	-0.5
FAR EAST	304	391	529	2.5	2.8	162	230	267	3.5	1.4
Indonesia	92	328	520	13.5	4.3		14			0.0
Malaysia	164	18	28	-19.7	4.0	1	87			0.0
DEVELOPED						1 547	2 002	2 627	2.6	2.5
NORTH AMERICA						335	487	505	3.8	0.3
Canada						23	52	81	8.3	4.1
United States						312	435	424	3.4	-0.2
EUROPE						1 030	1 323	1 934	2.5	3.5
EC						921	1 233	1 845	3.0	3.7
Austria						14	20	27	3.8	2.6
Belgium/Luxemburg						46	26	77	-5.5	10.3
Denmark						3	11	19	16.2	4.8
Finland								7	-9.8	56.6
France						63	145	189	8.7	2.4
Germany						275	226	238	-2.0	0.5
Greece						5	3	4	-4.9	2.5
Ireland						11	8	6	-2.7	-3.0
Italy						51	73	85	3.7	1.4
Netherlands						258	444	937	5.6	7.0
Portugal								1	-9.9	21.6
Spain						42	54	50	2.4	-0.6
Sweden						2			-42.7	
United Kingdom						151	177	205	1.6	1.3
Other Europe						109	90	89	-1.9	-0.1
Poland						24	30	39	2.2	2.4
Switzerland						21	22	24	0.5	0.8
Former USSR						130	138	122	0.6	-1.1
Oceania										
OTHER DEVELOPED						52	55	66	0.6	1.7
Japan						46	48	56	0.3	1.4

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Tea

Introduction

The production and trade projections presented in this section are derived from a dynamic times series model of the world tea market. This model quantifies key market relationships on the basis of observations on the past behaviour of volumes produced and traded, prices, and population and income growth. This projection methodology is a development of a former one used to provide projections for the FAO Intergovernmental Group meetings. By exploiting additional information concerning the economics of market behaviour, the revised methodology should provide a sounder basis for projections, and allow a wider range of alternative scenarios to be explored.

The projections presented here also include a first attempt at providing separate results for black and green tea. While the differences in demand and price trends make this a useful distinction, data limitations mean that the analysis of green tea markets is less detailed.

Black tea production

World black tea production is projected to increase to 2.4 million tonnes in 2010, an annual average growth rate of 1.2 percent from 2.15 million tonnes in 2000. This growth would result largely from the improvement in yields.

Most African producers are likely to see significant production growth as tea bushes reach optimum production age, and production skills of small growers improve. For example, production in Kenya would grow by 2.3 percent a year from 236 300 tonnes in 2000 to 304 000 tonnes in 2010, while growth rates in Tanzania and Uganda are expected to be 1.7 percent and 2.7 percent, respectively.¹

Most producers in Asia would experience a steady growth in production. Indonesia

is expected to achieve an annual growth of 1.1 percent, from 130 600 tonnes in 2000 to 147 000 tonnes in 2010. Over the same period, production in India, the world's largest black tea producing country, is projected to grow by 2.5 percent to 1.07 million tonnes, accounting for nearly 44 percent of global production, compared to 38 percent in 2000. Tea production in Sri Lanka is projected to reach 329 000 tonnes by 2010, an annual average growth rate of 0.7 percent. Black tea production in China is expected to continue to decline to 54 000 tonnes as the balance of production shifts to other teas with stronger market prospects.

The three largest black tea producing countries, India, Kenya and Sri Lanka, are expected to account for 70 percent of the world tea production in 2010, compared to 63 percent in 2000.

Black tea exports

World black tea exports in 2010 are projected at 1.14 million tonnes, reflecting an average annual increase of 1.1 percent from 1 million tonnes in 2000.

Most of this increase would take place in Africa, where production is likely to continue to grow while domestic consumption remains small. Exports from Kenya would increase by 2.6 percent annually from 208 200 tonnes in 2000 to 275 000 tonnes in 2010, giving Kenya 32 percent of global exports. Over the same period, export availability in Malawi would remain unchanged at 38 000 tonnes.

Most major tea exporting countries in Asia are expected to experience slight declines in exports in line with expected growth in income and population that would foster domestic consumption. For example, exports from India and Indonesia would decrease by 2.4 percent to 150 890 tonnes and by 1.1 percent to 87 000 tonnes, respectively. Conversely, exports from Sri Lanka would increase from 281 000 tonnes to 293 400 tonnes, an annual average growth rate of 0.4 percent.

Black tea consumption

In 2010 world net imports of black tea, a proxy for consumption, would amount to

¹ Some downward revision in production growth rates may be necessary for countries of East Africa in the light of potential labour shortage arising from the current HIV/AIDS epidemic.

1.15 million tonnes, reflecting an average annual increase of 0.6 percent from 1.08 million tonnes in 2000. Net imports in the countries of the former Soviet Union would increase from 223 600 tonnes to 315 200 tonnes, an annual average growth rate of 3 percent. Pakistan would increase its net imports by 2.9 percent per year from 109 400 tonnes to 150 000 tonnes. The United States is expected to increase net imports by 1.4 percent a year to 94 300 tonnes, while Japan would increase its net imports from 18 000 to 22 000 tonnes, an annual average growth rate of 1.8 percent. On the contrary, net imports by the United Kingdom are expected to decrease by 0.6 percent annually to 125 500 tonnes. These major importers together would account for about 60 percent of global net imports.

The model does not take into account stock levels. Hence, the difference between production and exports is treated as a proxy for domestic consumption in producing countries. In 2010, the quantity of black tea production that would be consumed in these countries is expected to reach 1.27 million tonnes, or 52 percent of global black tea production, compared to 1.14 million tonnes in 2000. Domestic consumption of black tea in India is expected to increase by an average annual rate of 3.7 percent to 919 300 tonnes by 2010, or 86 percent of the black tea produced in the country. During the same period, Indonesia is expected to increase its domestic consumption at an average annual rate of 4.0 percent from 33 100 tonnes to 51 000 tonnes. Domestic consumption in Bangladesh and Sri Lanka would grow by 2.0 percent and 3.8 percent to reach 45 000 tonnes and 36 000 tonnes, respectively.

Green tea market trends

Projections for green tea are provided only for production and exports due to data limitations. World green tea production is forecast to increase from 680 700 tonnes in 2000 to 900 000 tonnes in 2010, reflecting an annual average growth rate of 2.6 percent. During this period, production in China would grow by 2.7 percent per annum from 500 000 tonnes to 671 000 tonnes, accounting for 75 percent of global green tea production in 2010, compared to 73.5 percent in 2000. Production in Japan would grow by an average rate of 0.1 percent

to 90 800 tonnes, while production in Viet Nam is expected to increase by an average rate of 2.5 percent to 50 000 tonnes. Output in Indonesia would grow by 2.3 percent annually to reach 49 000 tonnes.

Green tea exports are expected to exhibit a significant upward trend in keeping with production. Total exports would increase by 2.8 percent annually from 186 800 tonnes in 2000 to 254 000 tonnes in 2010. China would continue to be the world's dominant green tea exporter, with shipments reaching 210 000 tonnes by 2010, reflecting an annual average growth rate of 2.7 percent. During the same period, exports from Indonesia are expected to increase by 3.8 percent per annum to 12 000 tonnes, while exports from Viet Nam would increase by 2.5 percent a year to 25 000 tonnes. Japan would consume most of its domestic production.

Morocco, the world's leading green tea importer, is expected to increase imports from 35 200 tonnes in 2000 to 57 100 tonnes in 2010, an annual average growth rate of 4.5 percent.

Issues and uncertainties

The projections indicate that over the next decade exports of black tea would increase at an annual growth rate of a little over one percent, mirroring a similar growth in production. However, the world market is expected to remain broadly in balance. In consequence, price levels should be maintained.

In contrast, with consumption outstripping the production of green tea, an upward trend would persist in the medium-term.

Several actions can be taken to enhance returns from black tea production. On the supply side, by reducing unit costs through productivity gains, building capacity of small growers, streamlining marketing channels and improving infrastructure, improved returns to growers may result.

On the demand side, consumption can be raised through effective marketing. Variations in demand among countries suggest that marketing activities need to be tailored to

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individual markets. Successful market-specific activities require in-depth knowledge and understanding of the target market, including consumers' preference and market structures. In addition, worldwide marketing efforts, such as the generic promotion of tea using the Tea Mark, could have a significant impact, if planned and implemented appropriately.

It is important that any action taken is done holistically to improve longer-term price prospects. Forming such a strategy requires better understanding of markets. Exchanging information and views between producers and consumers, as well as public and private sectors, could promote greater market transparency.

Table 2.32. Black tea: actual and projected production

	ACTUAL	PROJECTED	GROWTH RATES	
	2000	2010	1990 to 2000	2000 to 2010
	000 tonnes		Percent per year	
WORLD	2 145	2 443	0.9	1.2
AFRICA				
Kenya	236	304	1.7	2.3
Malawi	42	42	0.7	0
Uganda	29	39	14.3	2.7
Tanzania	24	29	2.4	1.7
ASIA				
India	815	1 070	1.2	2.5
Sri Lanka	305	329	2.5	0.7
Indonesia	131	147	0.3	1.1
China	65	54	-6.2	-1.7
Bangladesh	54	62	1.7	1.3

Table 2.33. Black tea: actual and projected exports

	ACTUAL	PROJECTED	GROWTH RATES	
	2000	2010	1990 to 2000	2000 to 2010
	000 tonnes		Percent per year	
WORLD	1 008	1 139	0	1.1
AFRICA				
Kenya	208	275	1.9	2.6
Malawi	38	38	-0.6	0
Uganda	26	38	16.8	3.5
Tanzania	22	28	3.8	2.2
ASIA				
Sri Lanka	281	293	2.5	0.4
India	198	151	-0.4	-2.4
Indonesia	98	87	-1	-1.1
China	28	21	-10.1	-2.6
Bangladesh	18	17	-3.6	-0.5

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Table 2.34. Black tea: actual and projected consumption

	ACTUAL	PROJECTED	GROWTH RATES	
	2000	2010	1990 to 2000	2000 to 2010
	000 tonnes		Percent per year	
WORLD ¹	2 214	2 413	2.2	0.8
Net imports	1 077	1 146	2.5	0.6
ASIA				
Pakistan	109	150	0.7	2.9
Japan	18	22	2.2	1.8
EUROPE				
United Kingdom	134	126	-0.6	-0.6
Germany	10	22	-3.4	7.4
France	9	7	-2.2	-2.3
Netherlands	15	17	2.2	1.1
Ireland	11	11	-0.4	0.0
Italy	4	4	0.2	0.0
Former USSR/CIS	224	315	2.7	3.1
NORTH AMERICA				
United States	81	94	0.4	1.4
Canada	15	19	1	2.2
OCEANIA				
Australia	14	11	-1.5	-2.2
Domestic consumption²	1 137	1 267	1.9	1.0
AFRICA				
Uganda	3	1	3.9	-9.5
Tanzania	1	1	0	0.0
Malawi	4	4	0	0.2
Kenya	28	29	0.2	0.3
ASIA				
India	617	919	1.8	3.7
Indonesia	33	51	6.1	4.0
China	37	31	-1.1	-1.6
Bangladesh	36	45	2.4	2.0
Sri Lanka	24	36	2.6	3.8

1/ Net imports plus domestic consumption

2/ Production minus exports

Table 2.35. Green tea: actual and projected production and exports

	PRODUCTION				EXPORTS			
	Actual 2000	Projected 2010	Growth rates 1990 to 2000 2000 to 2010		Actual 2000	Projected 2010	Growth rates 1990 to 2000 2000 to 2010	
	000 tonnes		Percent per year		000 tonnes		Percent per year	
World	681	900	2.5	2.6	187	254	6.3	2.8
China	500	671	3.8	2.7	156	210	5.8	2.7
Japan	90	91	0.0	0.1	1	1	8.0	0.0
Viet Nam	38	50	4.3	2.5	19	25	11.0	2.5
Indonesia	38	49	1.0	2.3	8	12	14.4	3.8

Bananas

Introduction

Projections were computed using a partial equilibrium, single commodity and multi-country model. The results assume that from 2006, the EC will adopt an import regime based on a single tariff of Euro 75 per tonne for all origins except the ACP suppliers whose bananas will be able to enter the EC at a zero duty. With a different tariff level the results would be different. Various tariff scenarios are explored below. The possible enlargement of the EC to include some Central and Eastern European countries is not taken into account.

Exports

General outlook

World banana exports are projected to reach almost 15 million tonnes in 2010, rising by approximately 28 percent with respect to the volume exported in the base period 1998–2000. The average annual increase would be between 1 and 2 percent from 2001 to 2005. The opening of the EC market in 2006 would be reflected by a rise in exports of some 5 percent that year. In subsequent years the growth would return to a more moderate rate of 2 percent per annum.

The projected growth of exports in the 2000–2010 decade is lower than the expansion observed in the previous one. Global exports rose by 48 percent from an annual average of 7.8 million tonnes in 1988–90 to some 11.7 million tonnes in 1998–2000.¹ The slower rate of growth projected for 2000–2010 can be explained by both supply and demand. On the supply side, structural adjustments have been made by banana producers in the wake of low prices at the end of the 1990s. The area planted to bananas has been reduced, although large differences exist between producing countries. Further, due to the weak financial situation of some banana companies, a reduction in capital investments in the plantations is likely to

decelerate productivity growth. The continued spread of Black Sigatoka in some Latin American and Caribbean countries is also expected to reduce the rate of expansion of production and exports. Finally, hurricane activity in the Caribbean and Central America, while unpredictable, is forecast by some analysts to intensify, with crop damages similar to those caused by Hurricane Iris in Belize in October 2001, becoming more widespread. However, plantations have an excellent capacity for recovery.

Outlook for exporting countries

The countries with the highest growth are Ecuador and the Philippines, with annual rates greater than 3 percent. Ecuador, the world's leading banana exporter, is expected to continue to take advantage of its very low production costs and the well established position of its large marketing companies, e.g. Noboa and ReyBanPac, in the world import markets. Its export could rise by 48 percent to almost 5.8 million tonnes in 2010, accounting for about 39 percent of world exports. Growth may be lower depending on the evolution of Black Sigatoka.

Ecuador's banana exports are expected to depend increasingly on the performance of larger farms. An agricultural census has revealed that in 2000 Ecuador had some 28 600 banana producing units. Almost 80 percent are smaller than 50 ha and concentrate only 35 percent of the total land planted to bananas. Recent studies have revealed that inflation has increased production costs, making small and low-yielding export-oriented farms unprofitable. The minimum profitable farm size in Ecuador has been estimated at around 60 ha and, in the medium term, only larger and more technically efficient farms are likely to sustain production. Production and export growth are expected to come mainly from increases in productivity, which are anticipated to arise from improvements in technical efficiency and economies of scale.

Ecuador has traditionally been considered a "residual" supplier of large multi-national banana trading companies, for it is mostly in Ecuador where non-Ecuadorian multinational companies acquire additional bananas when

¹ Due to unreported exports in 2000, the actual world exports are likely to be greater, probably slightly over 12.4 million tonnes over the 1998–2000 period.

their customer demands cannot be satisfied with their own production or that of contract farmers. However, its profile as a “residual” supplier may change should the scenario projected here materialize: following a tariff-only regime in the EC in 2006 banana export prices in Ecuador are forecast to increase by about 3 percent, and Ecuador may respond by rising its share of exports to the EC to more than the 30 percent that it presently enjoys.

Similar to Ecuador, the Philippines is expected to continue taking advantage of its low production costs and its well-established marketing channels in Asia, mostly through multinational banana companies. In addition, banana demand from two of its main markets, Eastern Asia and the Middle East, is expected to experience a steady growth this decade due to rising populations and incomes. The abolition of a law that restricted the area planted to bananas is likely to further boost output. The Philippines is projected to raise its exports by 44 percent to reach almost 2 million tonnes by 2010. The expansion would be accompanied by a reduction in banana export prices of about 1 percent per annum in the decade.

Exports from the world’s second and third largest supplier countries, Costa Rica and Colombia, are projected to grow at a slower rate than Ecuador and the Philippines, i.e. between 2 and 3 percent per annum, rising by 23 and 33 percent, respectively, over the current decade. Most of the increase should happen from 2006, when the opening of the EU market would increase export prices under the current scenario.

The model forecasts banana exports from Costa Rica to reach 2.5 million tonnes in 2010. However, the actual growth will depend on the performance of three banana producing and trading companies, Chiquita Brands, Standard Fruit Company and Del Monte, which together concentrate almost 85 percent of banana exports. The country has relatively higher production costs than its Latin American competitors owing to higher wages and stricter labour and environmental laws and standards. Productivity is also comparatively higher while shipping costs are lower. Its good environmental and social image should be a marketing advantage in some high-value

markets such as Western Europe and the United States. Export prices are anticipated to remain unchanged until 2006, when under the current scenario they would increase by as much as 4 percent. As a result, the share of EU imports from Costa Rica from 2005 to 2006 is forecast to increase by about 100 000 tonnes, or 13 percent.

Colombia, the third largest banana exporter after Ecuador and Costa Rica, is projected to raise its banana exports to some 2 million tonnes in 2010. The actual growth will depend on the evolution of the political, social and security situation in the banana production areas of Magdalena and Urabá. The increase of 6 percent in export prices to the EU in 2006 is expected to boost banana production and exports. The share and volume of banana imports into the EU from Colombia are anticipated to remain unchanged until 2005, and to increase one point, i.e. from 17 to 18 percent, in 2006. Prices and exports are forecast to remain stable between 2007 and 2010.

Aggregate exports from other Central and South American banana suppliers are projected to remain unchanged throughout the decade. Aggregate exports would slightly contract in the period 2000–2005 and then rise from 2006, reaching about 2 million tonnes in 2010. However, the situation varies across countries in this group. A declining trend would endure in Panama and Mexico. In Panama banana exports have fallen since the year 2000. Farms have closed and production has been disrupted following strikes. Productivity has also been declining due to lower investments in plantations. Revenues from banana exports in 2002 were 109 million dollars, some 10 percent lower than the previous year. Falling output and revenues are expected to continue. Conversely, Guatemala is anticipated to increase banana exports this decade. Output in 2002 is higher than pre-Hurricane Mitch levels (October 1998), showing the excellent capacity of crops for recovery when accompanied by investments in plantation infrastructure. Exports in 2001 were about 14 percent higher relative to the previous year (980 000 tonnes), with sales exclusively to the U.S. market. Based on this scenario, Guatemala is also anticipated to expand exports by about 10 percent in 2006 as overall world markets

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expand. Honduras exports have already recovered to pre-Hurricane Mitch levels in 1998 but are unlikely to grow further. Production was hit in 2001 by above-normal incidences of Black Sigatoka, and some exports to the EU and the United States were restricted by quality problems. Even if these problems continue, continuing investments by multinationals in Honduras should support a moderate expansion of trade. By 2002, exports had already reached 515 000 tonnes

The projections model indicates that exports from Caribbean ACP countries (Windward Islands, Suriname, Belize, Jamaica and the Dominican Republic) would decrease by some 30 percent, to approximately 260 000 tonnes by 2010. This decline could be explained by higher production and marketing costs, the continued absence of economies of scale and increasing labour and land costs due to competition from other economic activities. In addition, the preferential access of ACP countries to the EC market would be eroded if the EC moves to a tariff-only regime in 2006. The extent of this erosion will depend on the level of tariff preference granted to ACP countries. Export prices of conventional bananas are anticipated to remain unchanged until 2006, when they are expected to fall by about one-quarter.

The expected decline in exports should not be shared evenly across all Caribbean ACP countries. The Dominican Republic, for example, might enjoy an expansion of banana exports due to a change in the status of the new (2002) version of the EC banana import regime. Approximately half of the Dominican Republic export consists of organically grown bananas. Organic and conventional bananas have very different markets, the prices of the former being higher than those of the latter. The model does not take into account organic bananas, as they represent only a fraction of world exports. However, in the case of the Dominican Republic, these products could mitigate the anticipated fall in export revenues due to price decreases of conventional banana exports. Belize, unlike the other Caribbean ACP banana exporters, currently produces substantially more bananas than current licence procedures for exports to the EC allow. As a consequence, under a tariff-only system Belize may even expand exports to the EC.

Exports from African ACP countries are projected to remain relatively stable at some 450 000 tonnes throughout the decade. Almost all of these exports would come from only two sources (Côte d'Ivoire and Cameroon), with some marginal quantities originating from Ghana and other countries. Exports from Somalia are difficult to predict due to the persistence of political instability. There are concerns about the longer-term competitiveness of African banana exports, since costs remain above the world average. Exports have benefited from preferential access to the EU under the Lomé Convention, but with anticipated changes to that regime in 2006, export prices are forecast to decrease by about one-quarter. African banana exporting countries face structural problems similar to those of the Caribbean countries; however, their competitiveness gap relative to Latin American countries is not as big as that of Caribbean countries. Consequently, their exports to the EC may stabilize after an initial drop in 2006, but they might find some limited market opportunities in other African countries. In Cameroon, the banana sector is the fifth largest export earner, employing some 46 000 workers. The EU is supporting Cameroon's efforts to boost banana exports to reach the goal of 400 000 tonnes per annum in 2006 from some 180 000 tonnes in 1998–2000. The aim is to reduce production, transport and marketing costs so as to allow the country's local producers to compete with the "dollar" bananas from Central and South America once the preferential agreement is modified in 2006.

Imports

General outlook

World imports of bananas are projected to rise to about 14.3 million tonnes in 2010. World imports in 2010 are 4 percent lower than world exports to account for the fruit lost in transit¹.

The increase in imports is due to an expansion of the demand due to rising populations and incomes, as well as an increase in the quantities demanded due to a slight decline of banana prices. The projected rate of growth is

¹ The statement is also true for other years as the model clears the market every year of the projections.

lower than that of the previous decade (60 percent between 1988-90 and 1998-2000), partly due to the lower demographic growth for this decade and partly due to the near saturation levels of per capita consumption reached in developed countries. Conversely, banana imports are expected to grow faster in developing and transition countries. While these countries presently account for only one-quarter of world banana imports, they should be responsible for nearly half of the projected increase in global imports. Some of them are expected to become major players in the world banana economy by 2010.

Outlook by importing countries or regions

Developed countries

Rates of growth of aggregate banana imports in developed countries are projected to range between 1 and 2 percent per annum. This increase is relatively small considering that the population is projected to grow by some 0.3 percent per annum, annual income by 2.3 percent and prices are expected to decrease by about 1.3 percent per annum. The slow rise is explained by the near saturation consumption levels already reached in these markets, which result in low income and price elasticities. The model indicates that the United States and Canada would be responsible for almost 80 percent of the increase in world banana imports in the developed world until 2005. However, from 2006 to 2010, the EU would be the main engine of import growth.

The United States and Canada are projected to import over 4.6 million tonnes in 2010 from about 4.3 million tonnes in 2002 and their share of world banana trade is projected to decrease from 39 percent in 2002 to 32 percent in 2010. The two countries are anticipated to have the highest rates of growth of population (0.7 percent) and to be amongst the fastest growing economies in the developed world (2.4 percent). Per capita banana imports are expected to increase by 0.5 percent per annum, from 13.3 kg in 1998-2000 to 14 kg in 2010.

In Japan, imports are forecast to increase by about 0.7 percent per annum, or by some 8 percent at the end of the decade, reaching almost 1.1 million tonnes in 2010. The actual rate of growth depends to a large extent on the

performance of banana production in the Philippines. Production in the Philippines in 2001 and 2002 was affected by phytosanitary and weather-related problems, and the tight supply was reflected by rising banana import prices and lower imports in Japan. The increase forecast in 2010 is subject to the Philippines' banana production performing as in the 1990s, which saw sustained rates of growth of exports of some 4.6 percent per annum. Japan has no quantitative restrictions on banana imports, but applies a seasonal import tariff. Therefore, a fall of banana prices imported from the Philippines of 2 percent per annum would be required to equilibrate the demand and supply projected. Population is expected to stagnate at the end of the decade, and imports per capita are projected to increase from 7.7 kg in 1998-2000 to 8.2 kg in 2010.

The evolution of imports to the EC depends on the regime adopted in 2006, when there would be a transition from a banana import system based on tariff quotas to a tariff-only system. The extent of the increase will then depend on the level of the tariff levied on bananas originating from non-ACP countries. The results presented here assume that the tariff will be the same as the current tariff for non-ACP bananas within quotas A and B, i.e. 75 Euro per tonne. Under this hypothesis, EC banana imports would increase by some 350 000 tonnes in 2006 from 2005. They would reach about 3.9 million tonnes in 2010, i.e. a 25 percent increase over the decade. The addition of ten new members to the EC was not factored into the projection.

The fall of import prices in the EC would bring the world unit value of imports down by some 10 per cent in 2006, while the quantities traded internationally would increase by some 5 per cent. Other scenarios with different EC tariffs are examined below.

Developing countries

This group of countries shows the highest projected growth in imports. East Asian developing countries are projected to have the strongest growth with an annual rate of 5.8 percent. This is particularly the case for China, where rising population and incomes combined with China's entry into the WTO are expected to foster banana imports. Overall, East Asian