

Chapter 1

Overview

Introduction

The *Agricultural Outlook* is a collaborative effort of the Organisation for Economic Co-operation and Development (OECD) and the Food and Agriculture Organization (FAO) of the United Nations in Rome, bringing together commodity, policy and country expertise of both Organisations, and national government agencies to produce, with the aid of the Aglink-Cosimo model, a consensus view on a longer term assessment of global commodity markets. This assessment is not a forecast about the future, but rather a conditional scenario of what can be expected to happen under certain key assumptions concerning the macroeconomic environment over the coming ten years, and a continuation of current agricultural policy and trade settings around the world and specific external factors. The projections of production, consumption, stocks, trade and prices for the different agricultural products described and analysed in this report cover the years 2010 to 2019.

The setting

The last two years have witnessed considerable volatility in international commodity markets and global economic conditions. During this period many agricultural commodity prices rose to historically high levels that effectively shook the world out of its longstanding complacency about food availability and re-ignited concerns with food security. This was followed in rapid succession by an unprecedented global financial crisis, the start of a slowdown in global activity and then the rapid descent of the world economy into the deepest recession since the 1930s.

A pathway out of this economic abyss has now emerged with global economic recovery starting in late 2009. However, while the start of an economic turnaround is undeniable, growth is still not strong enough to conclude that a durable expansion is underway. The world is currently undergoing a two speed recovery. A rapid rebound in activity is taking place in the large developing countries, which is gradually extending to the rest of the developing world, while a more hesitant and fragile turnaround is underway in much of the OECD area. With the recovery primarily being driven by huge monetary easing and extensive fiscal stimulus packages, its sustainability will depend on how quickly confidence and private demand is restored, in a context of continuing high unemployment and rising energy prices. In any event, the transition to sustainable growth within the OECD area will be slow and likely protracted as robust recovery is still far from assured in a number of countries.

Agriculture has been more resilient to the economic downturn than many other sectors of the economy, but has not gone completely unscathed. Demand and trade in most commodities fell with the fall in GDP and this impacted more heavily on income sensitive products and consumption, as well as investments with tight credit, in the developing countries than in the OECD area. By the same token, with recovery advancing faster in the developing countries than in the developed world, this has led to a more rapid turnaround in agricultural demand and world trade. However, the aftermath of the recent

turmoil in commodity, economic and financial markets will continue to be felt over coming years and this situation increases the uncertainty in assessing market prospects around the world over the coming decade. Agricultural markets, in the near term, will thus reflect ongoing adjustments to the period of peak prices, the lingering effects of the deep recession and the start of economic recovery. All these adjustments effectively cloud the picture for the Outlook in the short term.

Despite this uncertainty, there remains in place a dynamic and highly predictable element at the heart of world agricultural markets. This is the inexorable shift underway at the core of agriculture towards an increasing role, and rising importance, of the developing and emerging economies in world agricultural production, consumption and trade. By and large, these countries are rebounding strongly from recession and with population growth rates that remain more than double those of the OECD area, will represent the major growth markets that will drive world agriculture forward over the next and coming decades. A return to higher global economic growth over the projection period together with continuing population gains, are expected to increase demand and trade and underpin prices for all agricultural products over the medium term. Growth and activity remains particularly dynamic in much of Asia and Latin America, with domestic demand, production and trade expansion in China, India and Brazil driving growth in their regions not only in the near term, but throughout the period covered by this Outlook.

The underlying economic conditions for agriculture are now more favourable than they were at this time last year, following the start of economic recovery. However, considerable uncertainties remain in the short term concerning the strength and pace of recovery in returning to a period of sustainable growth. The key macroeconomic and other assumptions underlying the *Agricultural Outlook* are summarised in Box 1.1.

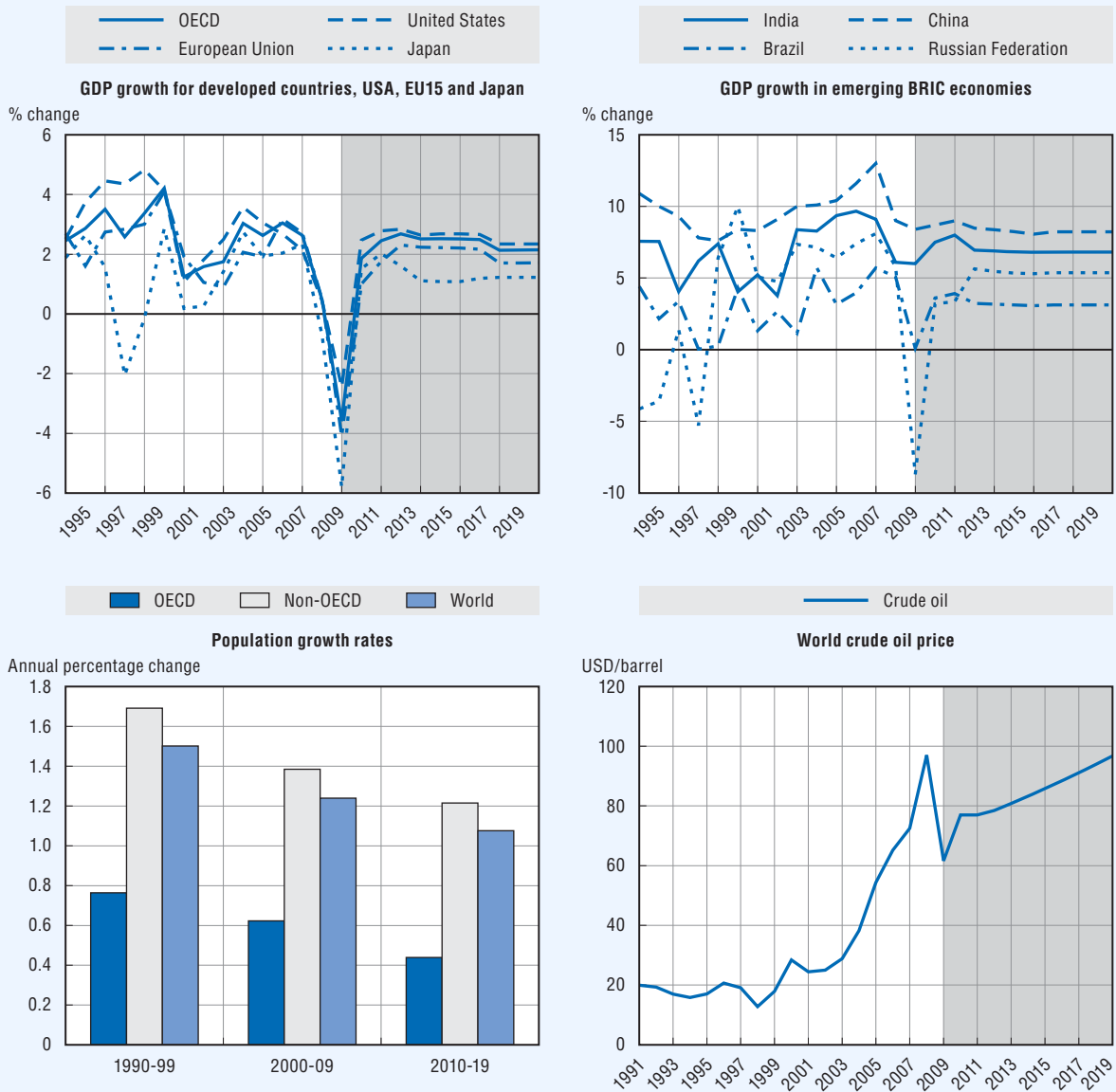
Box 1.1. The main underlying assumptions

Macroeconomic

- From the start of the Outlook, economic growth in the world and OECD area are in a recovery phase from the financial crisis and economic recession. The rebound in growth is expected to be more rapid in the developing countries and initially tepid and fragile in the OECD area and involving a longer transition period. Once the transition to sustainable gains is reached, the EU and US economies are expected to grow by 2% and 2.5% *per annum*, respectively to 2019; and with faster growth in some other OECD countries such as Korea, Turkey and Australia. Among the developing countries, the leading Asian economies have fared better than most and lead the world economic recovery. China and India's GDP are projected to grow by nearly 8% and 6.6% *per annum*, respectively. GDP growth in Brazil and Argentina averages 4.5% and 3% *per annum* to 2019. Agricultural trade is estimated to have declined sharply in 2009, along with general merchandise trade, and is expected to bounce back sharply from the beginning of the Outlook in 2010 and continue to grow in following years.
- The timing and implementation of government exit strategies to remove excessive liquidity from national economies and to reduce excessive budget deficits and restore fiscal balance are expected to occur in a period of strengthening private demand so that GDP growth is unimpaired.
- World population growth is expected to average 1.1% *per annum* to 2019, compared with 1.2% in the previous decade. Only slow population growth of 0.4% *per annum* is expected in the OECD area. Higher growth is expected in the developing countries, with the population of Africa as a whole growing at over 2% *per annum*. Continuing urbanisation trends and rising per capita incomes, emerging large middle classes and underlying population demographics collectively reinforce higher food demand in these countries.

Box 1.1. The main underlying assumptions (cont.)

Figure 1.1. Macroeconomic trends



Source: OECD and FAO Secretariats.

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- The global economic downturn has dampened inflationary pressures. As the OECD and world economy moves back into growth, Inflation is expected to remain subdued. Inflation is projected at levels close to 2% per annum throughout most of the OECD area to 2019. Higher inflation is expected in a number of emerging and developing economies such as the Russian Federation, Argentina, India and South Africa.
- Under the assumption of constant real exchange rates, the US dollar strengthens against most currencies. The currencies of high inflation countries will depreciate most relative to the US dollar. Crude oil and energy prices are assumed to increase over the coming decade as global economic activity is restored. Crude oil prices are expected to reach over USD 96 per barrel in 2019 and to remain above the average level of the decade prior to the oil price spike.

Box 1.1. The main underlying assumptions (cont.)

Policy considerations

- Agricultural and trade policies play an important role in both domestic and international markets for agricultural commodities and food products. OECD and emerging economies have gradually reformed their agriculture policies over the past two decades. At the same time, non-agricultural policies, such as energy, environmental and rural development measures, have a growing impact on the agri-food sector.
- Provisions of current legislation concerning agricultural and trade policy are assumed to remain in effect over the Outlook period. These include the provisions of the Food, Conservation and Energy Act of 2008 in the United States. For the European Union the outcome of the CAP Health Check of 2008 will continue in force in the European Union. Other provisions include mandates for renewable fuels such as in the EU and US based on agricultural feed stocks, blending provision for renewable fuels as mandated in Brazil for ethanol. In the US the Energy Independence and Security Act of 2007 is complemented by the Renewable Fuel Standard Program (RFS2) Final Rule of the EPA (Environmental Protection Agency). For the EU, the Renewable Energy Directive (RED) specifies the share of renewable energy sources (including non-liquids) should increase to 10% of total transport fuel use by 2020. Countries are also assumed to comply with all existing bilateral and multilateral agreements, such as NAFTA and WTO agreements in effect in late 2009. Other assumptions included a continuation of longer term trends in productivity growth and average or normal weather conditions i.e. absence of weather related supply shocks.

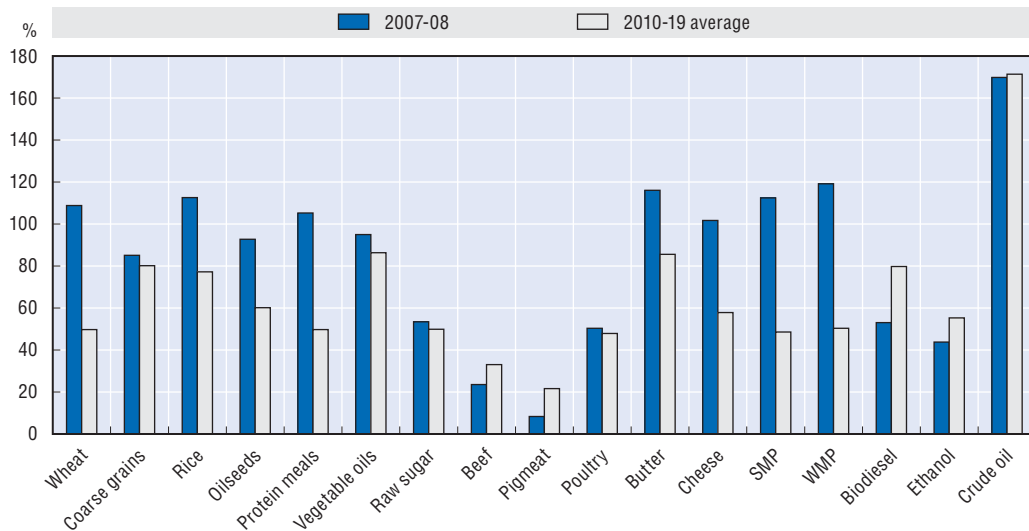
World markets at a glance

Prices to remain on a higher plateau

As was correctly anticipated in last year's *Agricultural Outlook*, international market prices for most agricultural products have retreated considerably in 2009 in response to a strong production response and lower demand due to the recent high prices and with the onset of the global recession. In a context where energy prices remain generally high by historical standards and expected to rise further with global economic recovery that is underway, the Outlook projects that most crop prices will remain at or above 2010 levels in the longer term. These will continue to exceed, in nominal and real terms (once adjusted for inflation), the average price levels in the decade preceding the price hikes of 2007/08. Apart from pig meat, this is also true for livestock prices which remain above the average levels for the last decade, in real terms (Figures 1.2 and 1.3).

Overall, the Outlook foresees that nominal price of all commodities covered in the Outlook will be on a higher plateau over the projection period, 2010 to 2019. However they will tend to remain below the recent peak levels of 2007/08. In the case of wheat, rice, protein meals, cheese and skim milk powder, average prices over the projection period will be around 50% or more below the peak levels reached in 2007/08. As some commodities, such as sugar, beef and pig meat did not undergo the same rapid run up in their prices in 2007/08, average nominal prices for the decade ahead will be about the same or exceed the levels of 2007/08 by 10-20%. For the entirety of agricultural products covered by this Outlook, however, average nominal prices over the projection period will exceed those of the previous decade prior to the period of peak prices. These price gains are expected to be highest for vegetable oils and butter at over 85% above those in achieved in 1996-2006. Of the products at the lower end of the nominal price increase scale, pig meat prices will show the smallest increase, rising by just over 21% above the 1997-2006 average level, on average, over the period to 2019.

Figure 1.2. **Nominal commodity prices to remain above average levels of the previous decade but lower than 2007/08**



Note: For biodiesel and ethanol the base period is 2001-06. The crude oil price projection is an Economic Department exogenous assumption.

Source: OECD and FAO Secretariats.


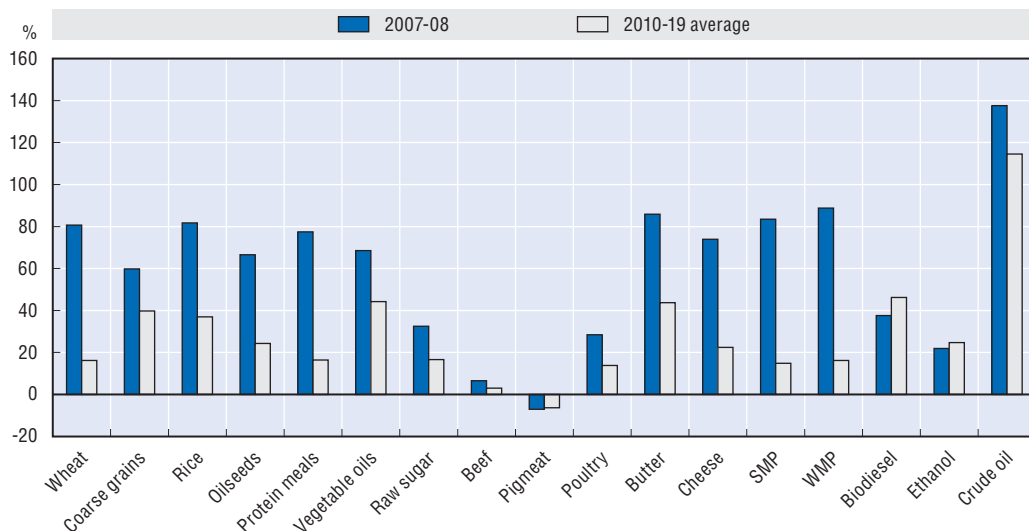

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Figure 1.3. **Most commodity prices in real terms to remain above the last decade's levels**



Note: For biodiesel and ethanol the base period is 2001-06. The crude oil projection is an Economic Department exogenous assumption.

Source: OECD and FAO Secretariats.

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After allowing for inflation, prices in real terms are also expected, on average, to be much below their 2007/08 peak levels (Figure 1.3). The agricultural products that show the largest fall in real prices, when compared to their 2007/08 level, are: wheat, rice, oilseeds, protein meals, butter, cheese and skim milk powder. However, over the Outlook period, real prices of all products other than pig meat are expected to be above their average 1997-2006

level. Pig meat prices are not anticipated to increase much beyond 2014 due to a fast increase in supply with high productivity gains in Brazil and China. The price increases, in real terms, range for crops from around 16% to over 40% above their average for the last decade. In the case of livestock products the increase over the average of the last decade are largest for dairy products. The average level of the crude oil price, in real terms, that is exogenously projected for the coming decade is also substantially below its 2007/08 peak, but still remains relatively high at 114% above the 1997-2006 average level.

Agricultural commodity markets increasingly driven by developing countries

Increased market integration, globalisation and rapid income growth over a number of years prior to the recent economic crisis, have enhanced the role and importance of key developing and emerging economies of the non-OECD region on world agricultural markets. This increasing influence associated with rising affluence and feeding expanding populations is being manifested in different ways on international markets with continued economic development and the resulting transformation of their economies. Initially the momentum arising from strong income growth boosts food demand and imports for a range of agricultural products and processed foods to feed large concentrations of people migrating from rural to mega urban centres. Subsequently it provides the impetus for the development of domestic production capacity, financed from either domestic savings or from growing foreign direct investment flows to these developing and emerging economies. Investment in manufacturing, processing and domestic production capacity is expected to be particularly strong in the “expanded” BRIC countries of Brazil, The Russian Federation, India, Indonesia and China. It is also becoming a generally shared priority of other high growth emerging countries. One of the motivations behind such investments is to capture a growing share of the higher value added component of domestically consumed agricultural products.


At the same time OECD area agriculture is undergoing reforms that reflect changing circumstances and priorities and which are gradually modifying production incentives towards increased market orientation and any underlying comparative advantages. These evolving developments and trends are raising the profile of lower cost agricultural industries and sectors in the developing and emerging economies relative to their counterparts in the mature economies in the OECD area. In fact, for the OECD area as a whole, both production and consumption growth prospects for all the 15 agricultural commodities covered in this Outlook and listed in Table 1.1, are expected to be increasingly eclipsed by the group of developing, least developed and emerging countries comprising the non-OECD region. As revealed in this table, the largest growth differentials are consistent across both production and consumption, reflecting the strong expansion in the high value added livestock meat products of beef, poultry and pig meat, and of dairy products covering butter, cheese and milk powders. Apart from these products, high growth differentials also favour the non-OECD region for coarse grains, protein meals and sugar. In fact, in almost all cases, the majority of production growth for these products will be coming from outside the OECD area, where growth rates are 2-3 times larger than for OECD countries. The same situation applies for much of the consumption growth as well. As a result, the OECD area’s share in global output and use for these products continues to decline over the projection period from 2010 and 2019.

Figure 1.4 shows the percentage increase in production of crops and livestock products over the projection period. Figure 1.4 indicates that that global production of crop products will increase by over 13% by 2019, when compared to the base period 2007-09, suggesting

Table 1.1. **Production and consumption annual growth rates (least squares), 2010-19**

	Production (%)			Consumption (%)		
	Total	OECD	Non-OECD	Total	OECD	Non-OECD
Wheat	1.1	0.8	1.3	1.2	1.0	1.3
Rice	1.0	0.3	1.1	1.1	0.6	1.1
Coarse grains	1.6	1.0	2.1	1.5	0.9	2.1
Oilseeds	1.9	1.3	2.2	1.9	1.4	2.2
Protein meal	2.2	1.5	2.5	2.2	1.0	3.2
Beef	1.5	0.5	2.2	1.5	0.6	2.1
Pig meat	1.7	0.7	2.3	1.8	0.7	2.3
Poultry meat	2.4	1.3	3.0	2.4	1.6	2.8
Milk	2.2	0.8	3.1
Butter	2.2	0.7	3.0	2.1	0.4	2.9
Cheese	1.8	1.3	3.1	1.8	1.3	2.9
Skim milk powder	1.0	0.3	3.0	1.0	0.2	1.9
Whole milk powder	2.5	0.7	3.8	2.5	1.0	2.9
Vegetable oils	2.9	1.7	3.2	2.8	2.3	3.1
Sugar	1.4	0.0	1.8	1.8	0.5	2.2

Source: OECD and FAO Secretariats.

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more ample supplies in the period ahead. The increases in projected production range from 14% for wheat to nearly 39% for vegetable oils. In terms of the OECD and non-OECD regions, production of oilseeds and vegetable oils increase the most for the former group of developed countries, and this is also true for the non-OECD countries, but with sugar also included amongst the crops showing the largest production expansion. For livestock products, the largest increase in global production is of whole milk powder which is projected to increase by 31% and for poultry and butter which grow by 29% and 28%, respectively, over the projection period, relative to the base period. Within the OECD area, cheese (14%), whole milk powder (12%) and poultry (11%) show the largest increases relative to the base period. For the non-OECD group of countries, the leading growth products are comprised of whole milk powder (48%), poultry and skim milk powder (43%), butter (42%), and with cheese (38%) also showing rapid production increases to 2019.

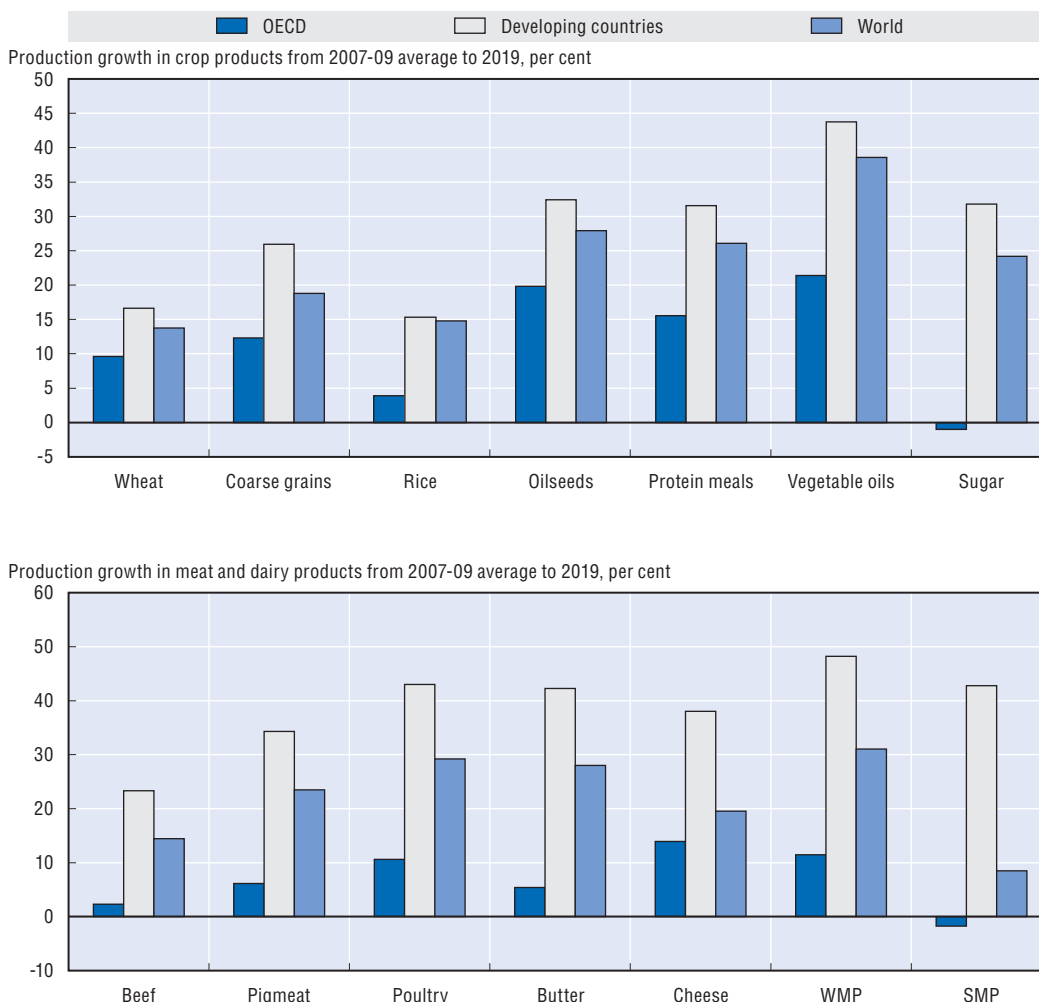
It is interesting to see what the projections imply for agricultural production when disaggregated by countries and regions. This is shown in the next section.

Agricultural production by country and region

The Outlook provides extensive detail on balances for various commodities on a global, regional and country basis. Aggregation across commodities provides a summary measure of how the agricultural sectors of countries and regions or economic groups are performing.¹ In terms of the commodities covered in this Outlook, agricultural commodity sectors are performing quite differently across these groups, as noted in Figures 1.5 to 1.8.

Based on commodities of this Outlook, Brazil is the fastest growing agricultural sector by far, growing by over 40% to 2019, when compared to the 2007-09 base period. The Russian Federation and Ukraine are projected to grow 26% and 29%, provided plans and support measure by the respective governments proceed as indicated and bear fruit, marking a significant recovery in production levels. China and India may also grow significantly by 26% and 21%, respectively. While Australia is projected to grow some 17%,

Figure 1.4. **Change in production of crop and livestock products (per cent change 2019 compared to 2007-09)**



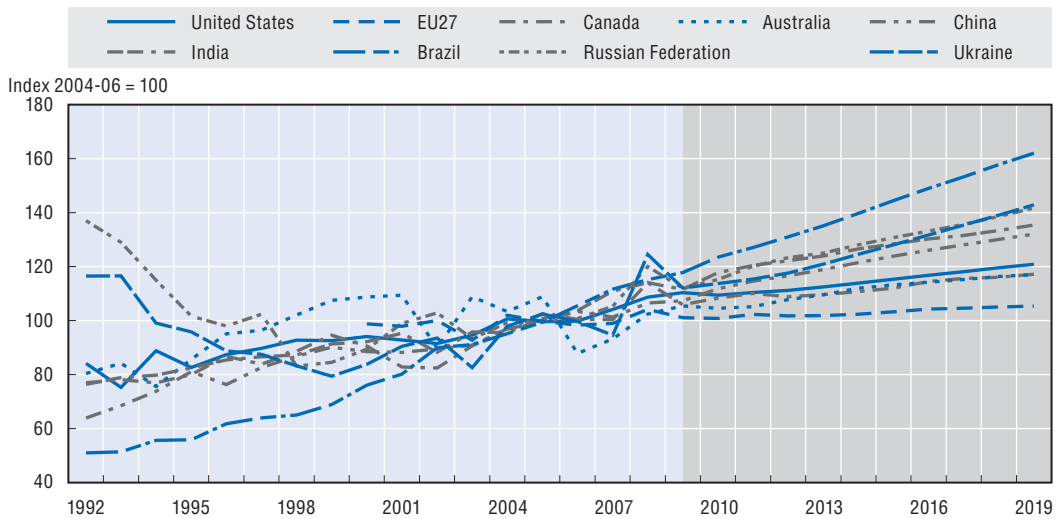
Source: OECD and FAO Secretariats.

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this growth reflects an assumed return to more normal yields; over a longer period of comparison, Australia's production by 2019 is only some 7% higher than in 2000. Production growth in the US and Canada is projected in the 10-15% range over the same period. In contrast, over the same period, net agricultural output in the EU27 will have grown less than 4%. These diverse trends reflect important developments in these countries which may be generating or inhibiting growth.

By region, production measures, on a per capita basis, provide an interesting viewpoint on longer term developments in global agriculture and their potential implications for food supplies. As noted in Figure 1.6, per capita output has fallen in North Africa and the Middle East, largely due to limited water availability and policies in some countries such as Saudi Arabia to reduce highly subsidised wheat production. Production in the sub-Saharan region of Africa is expected to be stagnant in per capita terms, as production barely keeps pace with population growth still averaging around 2.2% per year. In Western Europe, production is also stagnant. Growth in consumption on a per capita

Figure 1.5. **Net agricultural production for selected countries**
(index 2004-06 = 100)



Source: OECD and FAO Secretariats.


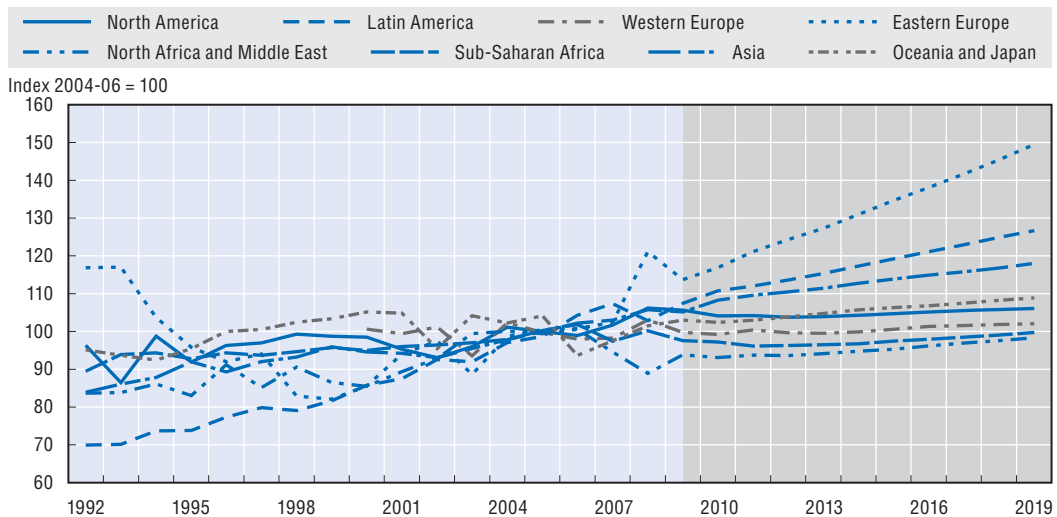

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Figure 1.6. **Net agricultural production for regions on a per capita basis**
(index 2004-06 = 100)



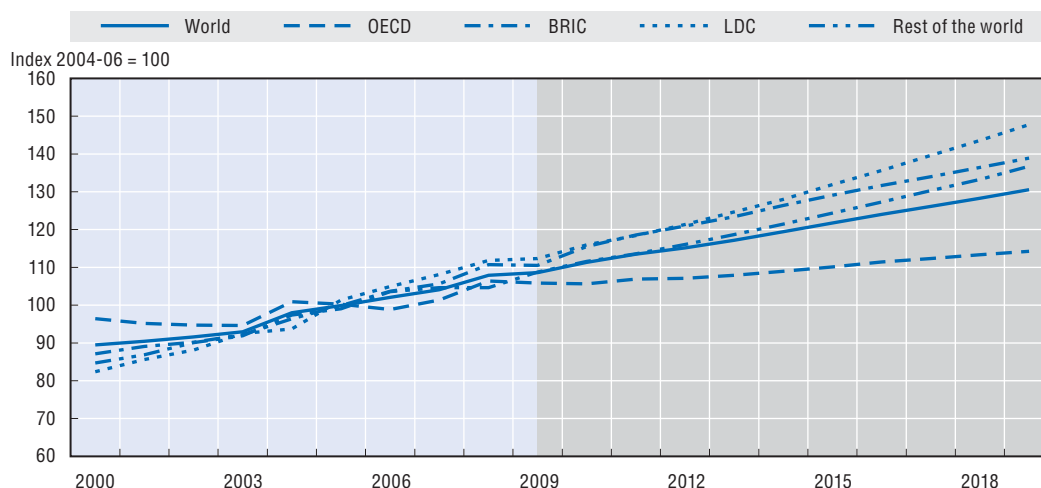
Source: OECD and FAO Secretariats.

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basis in this region will need to be met by imports. Latin America is the fastest growing production region, but in per capita terms Eastern Europe, is the fastest growing, because projections assume that in this region's population numbers will actually decline by over 3% over the Outlook period.

Agricultural production is growing much faster outside the OECD area (Figure 1.7). While world net production of commodities covered in this Outlook will have grown 22% over the period to 2019, production in the OECD area is projected to grow only 10%. Some country groupings grow about three times as fast with Brazil, The Russian Federation,

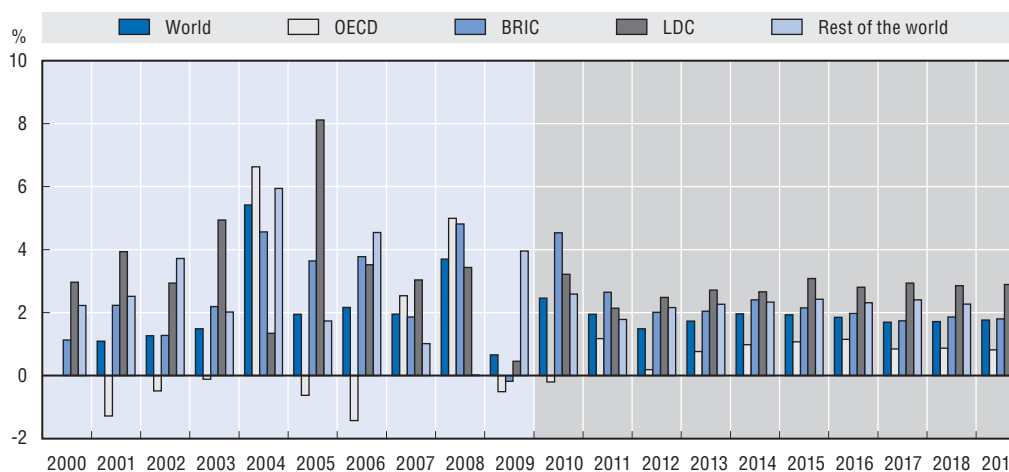
Figure 1.7. **Net agricultural production for world and economic groups (index 2004-06 = 100)**



Source: OECD and FAO Secretariats.

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Figure 1.8. **Net agricultural production for economic groups (percentage change)**



Source: OECD and FAO Secretariats.

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India, China (BRIC) group growing by 27%, LDCs by 33% and other developing countries by 29% to 2019. If measured in per capita terms, OECD agricultural production growth is minimal as is production growth by the LDC group.

If assessed in terms of annual changes in net production, some interesting patterns emerge, as seen in Figure 1.8. First, the historical annual variation of production in the OECD area exceeds the variation by other country groups. Second, it is notable that in response to the high prices of 2007/08, OECD production response was the largest, followed closely by BRIC countries, and LDCs. Production by the remaining countries of the rest of the world as a whole declined in 2008/09, largely due to weather related production problems in larger countries such as Argentina. Third, it is also notable that agricultural production growth was also largely stagnant in most countries during the global recession, but declines were by and large less in agriculture than in the rest of the economy.

Consumption trends

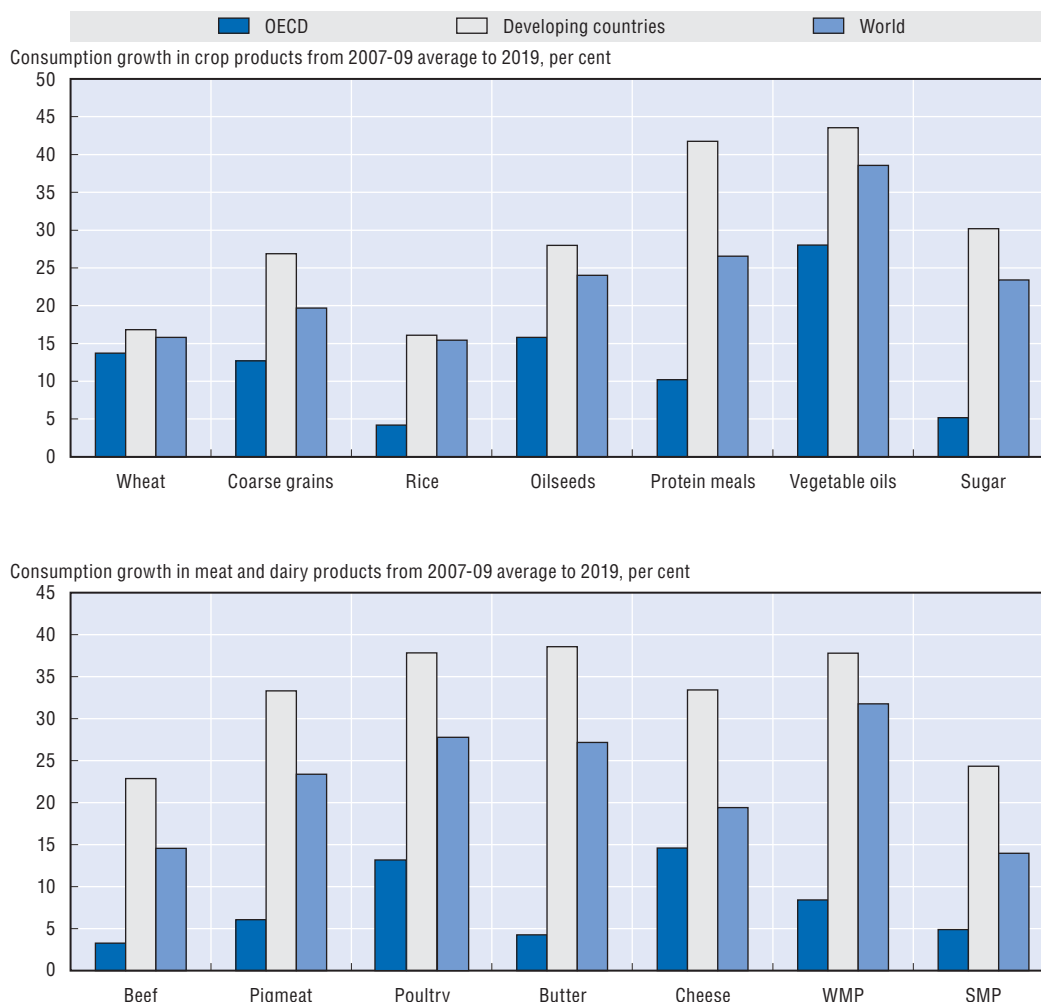
As in the case for production, world consumption of agricultural products is also being driven by the developing and emerging economies. These countries which are enjoying increased affluence with rising per capita incomes over a number of years, and with population demographics and continuing urbanisation to mega population centres also reinforcing demand, are leading to significant changes in consumption and dietary habits. This involves a transition from traditional staple foods and grains to more processed and prepared food products and convenience foods, containing a greater proportion of animal protein and with more fruits and vegetables, in national diets. Over time as food expenditures form a smaller proportion of household budgets, particularly for the swelling middle classes of the large developing and emerging economies, food consumption is expected to become less responsive to changes in prices and incomes similar to existing trends in many OECD countries. Consumption projections in the more mature markets of OECD countries show less growth. Here the quantities and composition of consumption are being driven more by population growth and its changing demographics with ageing as well as by concerns over diets and general health issues than by price or income considerations.

Figure 1.9 shows the percentage increase in consumption of crop and livestock products over the projection period to 2019, when compared to 2007-09. It clearly illustrates that the consumption of agricultural products continues to grow rapidly in the non-OECD area but is slowing elsewhere. For crop products, consumption in the non-OECD countries shows the largest increase for vegetable oils (44%), protein meals (42%) and sugar (30%). In the case of protein meals, this reflects the growth in livestock industries to meet rising domestic demand for livestock products. For the other two commodities, a portion of the projected growth in use arises from increased use for food processing and manufacture. For the OECD area, vegetable oils (28%) head the list of consumption increases, followed by oilseeds (16%) and cereals (13-14%) by 2019. This consumption growth reflects a combination of changes including slowly rising demand for food, faster growth in feed use and also as feedstocks for expanding biofuels production. In the case of meat and dairy products, the fastest consumption increase for the non-OECD region occurs for dairy products of whole milk powder and butter (38%), followed by poultry (37%) over the period to 2019. While these changes represent a faster increase in meat and dairy products use than in the OECD area, in a number of cases they are taking place from a smaller consumption base.

Trade developments

Trade flows and trade patterns in agricultural products also continue to evolve with increased south-south trade in addition to the traditional north-south trade. On the import side, the developing countries are becoming increasingly integrated into world agricultural trade and regional markets. While other countries such as China with a well established presence on international markets seek to diversify their sources of supply resulting in new economic interactions and trade between developing and other countries that are effectively reshaping world-wide flows of agricultural trade. In addition, developing country groupings which have become well integrated into the world trade infrastructure, are assuming greater prominence in international trade negotiations and their agendas. Apart from dominating import growth for most of the commodities in the Outlook, non-OECD countries also exhibit, with few exceptions, the strongest growth in exports; albeit from a low base for some commodities. Although exports may be growing rapidly for

Figure 1.9. **Change in consumption of crop and livestock products (per cent change 2019 compared to 2007-09)**

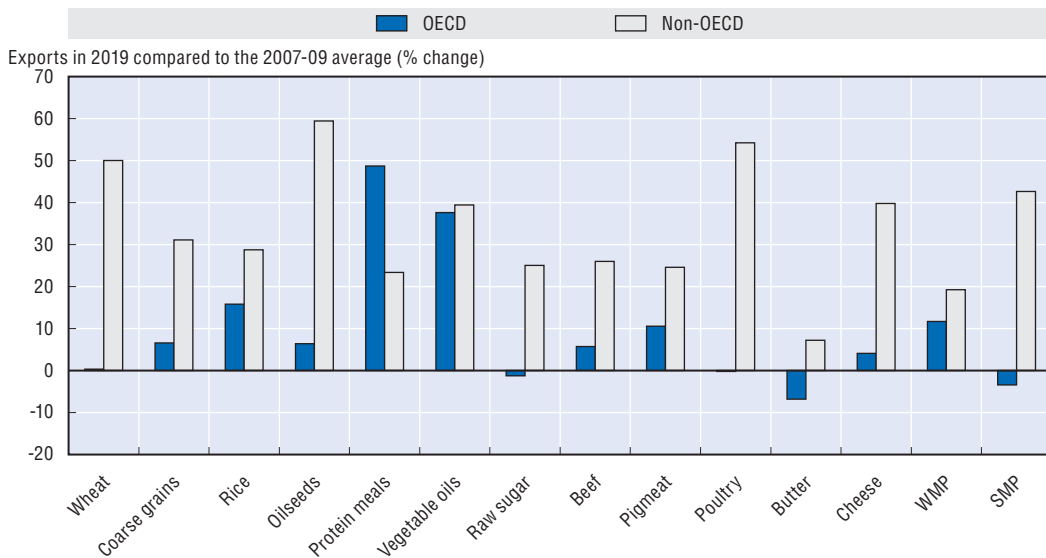


Source: OECD and FAO Secretariats.


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commodities such as dairy products, the non-OECD countries still remain very large net importers over the Outlook period. Increasing export shares in almost all commodity markets is being achieved by a combination of strategies. Not only are they displacing traditional exporters and competitors with lower cost products or by growing faster, they are also becoming dominant in regional markets which can provide a springboard for further international market expansion. From Figure 1.10, non-OECD countries are projected to show the strongest percentage increase in exports by 2019, relative to the 2007-09 base, for oilseeds (59%), poultry (54%), wheat (50%), skim milk powder (43%), and cheese and vegetable oils (39%). On the other hand, OECD countries as a whole will tend to lose export shares in many commodities to non-OECD countries over the Outlook period. For the OECD area the largest gain in exports by 2019 compared to 2007-09, are for protein meals (49%), vegetable oils (38%) and rice (16%). While the gains illustrated in Figure 1.10 underscore the dynamic growth underway in the trade of developing and emerging economies as a whole, relative to the OECD area's general contraction, they do

Figure 1.10. Exports of OECD and non-OECD countries to 2019 (per cent change)



Source: OECD and FAO Secretariats.

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not tell the whole story. Trade shares continue to be dominated in absolute terms by the OECD countries and their long established industries for a range of products (with projected global market share in 2019 shown in brackets) such as for: wheat (54%), coarse grains (60%), pig meat (80%), butter (79%), cheese (65%), whole milk powder (66%) and skim milk powder (73%). For the developing and emerging countries, the products for which they show rapid growth and also hold dominate global trade shares, are as follows: rice (89%), oilseeds (57%), protein meals (81%), vegetable oils (92%), sugar (89%), beef and veal (56%) and poultry (66%).

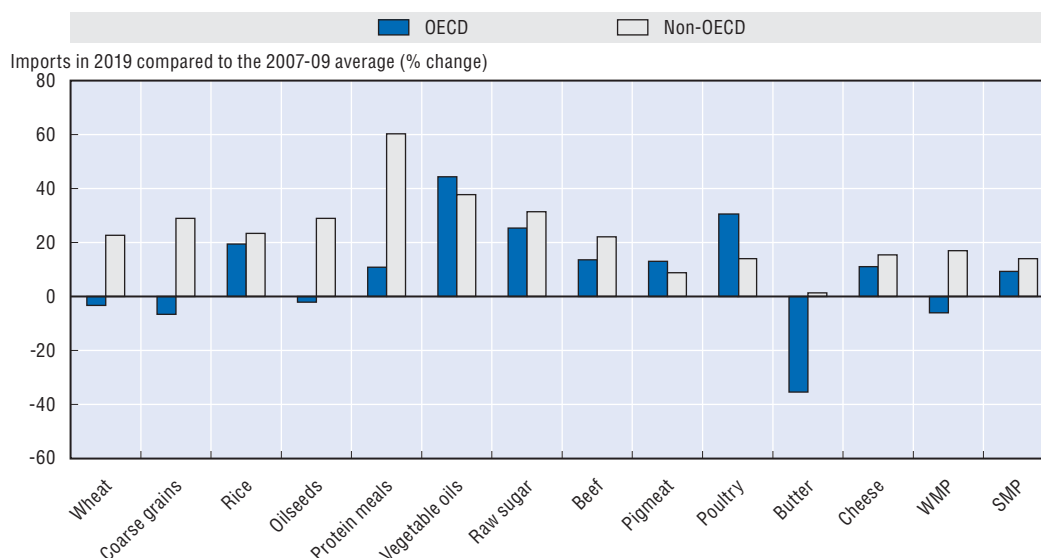
The foregoing discussion suggests that there will be considerable additional production of agricultural products available to meet anticipated higher domestic and import demand for food and feed purposes over the coming decade to 2019. OECD agriculture will continue to supply a large share of the additional world food and feed supplies. However, in many instances, their lower growth prospects, higher cost and more limited resource bases relative to the new players on the block from the non-OECD region suggests that the contribution of the OECD area to global food balances will continue to decline and with an increasing orientation towards the higher value-added components of the food chain.

Main trends in individual commodity markets


World commodity prices to remain high

With the exception mainly of sugar, agricultural commodity markets covered in this Outlook have calmed considerably with a return to more normal conditions following the turbulence of the last two years. Most commodity prices have fallen from price peaks at the start of the Outlook as a result of larger supplies becoming available and with continuing weaker demand in the aftermath of the economic crisis. With the start of economic recovery, the economic environment has now turned more positive than this time last year. Provided growth is durable and increases to levels offering sustainable gains over coming

Figure 1.11. Imports of OECD and non-OECD countries to 2019 (per cent change)



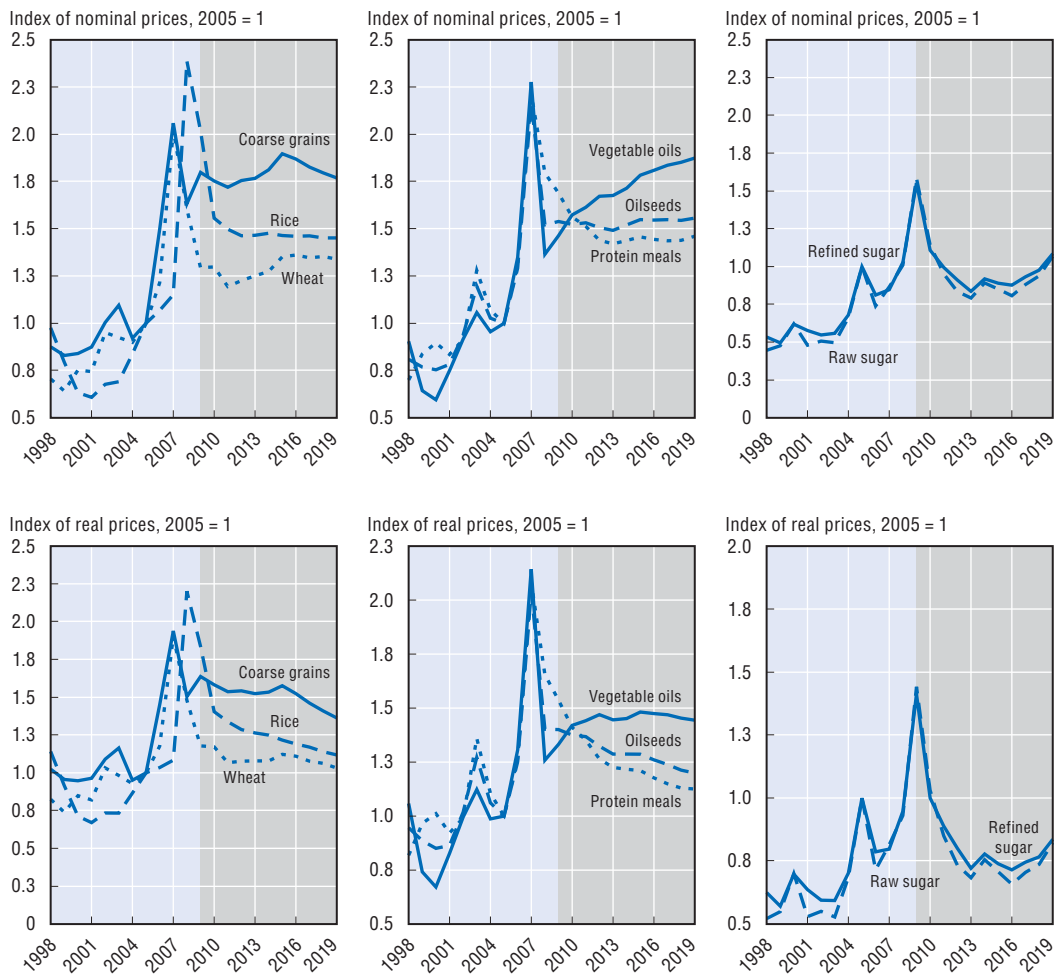
Source: OECD and FAO Secretariats.

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years this should be supportive to a general strengthening of demand, trade and commodity prices over the Outlook. Stronger demand, with an anticipated return to higher growth following economic recovery and from increasing populations, should outpace production growth, on average, over the projection period to maintain all commodity prices on a higher plateau relative to the average of the last decade prior to the 2007/08 price surge. The projection of crop prices in nominal and real terms (once adjusted for inflation) is illustrated in Figure 1.12 and those for livestock products in Figure 1.13.

A longstanding feature of international commodity prices, including for agricultural products, is their high volatility in comparison to industrial goods and manufactures. This arises from the characteristics of agricultural products and comes primarily from the production side. Supplies of agricultural products are characterised by low responsiveness in the short term with realised production fluctuating due to weather and changes in relative prices, while demand grows steadily and remains fairly inflexible. Low elasticities mean that small shocks to production can have a large impact on price. The extent to which this price volatility is passed through to domestic markets depends on the degree of price transmission. The co-movement of world and domestic prices can be obstructed by border measures, domestic price supports and infrastructure weaknesses that affect the degree to which domestic markets are integrated with world markets. The issue of price transmission and possible policy responses to international price risk and volatility are discussed more fully in Chapter 2 of this report.

The surge in crop prices to near record highs in 2007/08 was due to the contemporaneous occurrence of a panoply of contributing factors, which are not likely to be repeated in the near term. However, if history is any guide, further episodes of strong price fluctuations in agricultural product prices cannot be ruled out nor can future short-lived crises. This is particularly clear when considering the heightened linkages between crop and energy prices. The increased variability in crude oil prices should impact on crop prices through both demand and supply, even though the demand link is weakened in this Outlook by the increasing

Figure 1.12. **The Outlook for world crop prices to 2019**

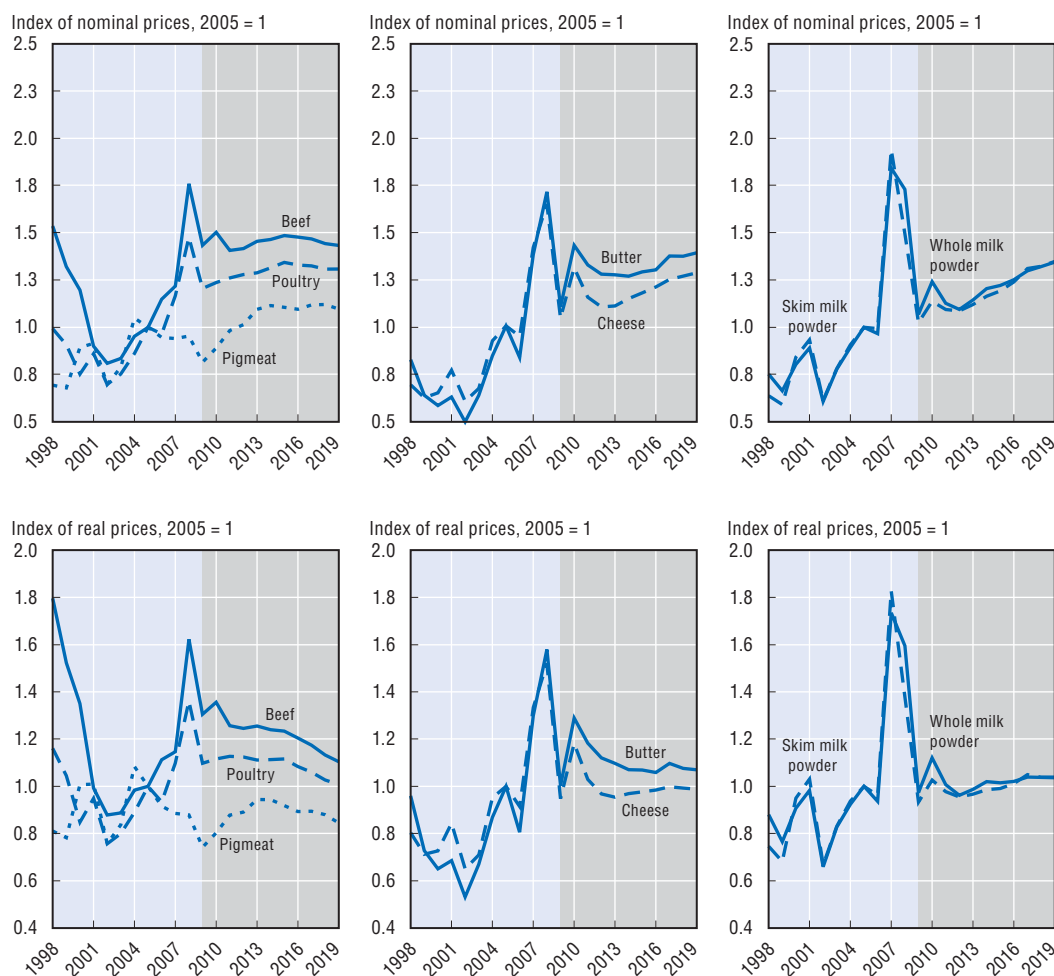
Source: OECD and FAO Secretariats.

StatLink  <http://dx.doi.org/10.1787/888932285715>

importance of quantitative biofuel mandates. In addition, with trends underway towards greater macroeconomic integration and increased globalisation, world financial and economic shocks will be increasingly transmitted through exchange rates onto domestic markets. These changes when sustained can profoundly affect the competitive position of nations wishing to trade on international markets, or to build domestic production capacity and thus also increase variability on world commodity markets.

Large supplies to keep cereal prices under pressure

The world wheat and coarse grain markets at the start of the Outlook are marked by a return to normality after two exceptionally turbulent seasons. A combination of a sharp recovery in supply, with bumper crops replenishing stocks and a slowdown in demand, driven by the high prices, reduced policy supports for biofuels in some countries, troubled financial markets and recession, forced international prices to lower levels at a fast pace. Stocks of wheat and coarse grains are expected to increase over the Outlook period, although much of these will be located outside the traditional exporters and the stocks-to-use ratio should remain relatively low when compared to the previous decade.

Figure 1.13. **The Outlook for world livestock prices to 2019**

Source: OECD and FAO Secretariats.

StatLink  <http://dx.doi.org/10.1787/888932285734>

This development is expected to underpin wheat prices to some extent but may also make them more unstable. The price of the benchmark US wheat (No. 2 Hard Red Winter, f.o.b. Gulf) is projected to increase to USD 225 per tonne by 2019, up 3% from the average in 2007-09. In real terms, however, wheat prices are likely to continue their long-term decline, albeit falling less rapidly and from higher levels. In the case of coarse grains, current projections for stocks and utilisation point to a somewhat tighter supply and demand balance during the early years of the projection period resulting in prices rising the fastest until 2016. The situation is likely to improve thereafter because of slower growth of use for ethanol production. By 2019, the price of the benchmark US maize (No. 2 Yellow, Gulf) is projected to reach USD 187 per tonne, almost unchanged from the average in 2009. A noteworthy feature is the drop in wheat to maize price ratio to a low ratio of 1.1-1.2, compared to 1.3-1.6 in the past, indicating a stronger upside potential for maize prices than for wheat.

World producers of cereals may take comfort in the fact that prices are likely to remain relatively strong compared to the previous decade, and consumers will find that prices are unlikely to reach the highs that provoked so much of the recent turmoil in food markets.

However, one feature which will not be of any benefit to producers or consumers is a continuation of price volatility in the coming years. Continuing instability will be a factor for all cereal markets as the linkages are strong enough to influence them all. Wheat markets are projected to be well supplied with production increases keeping pace with consumption which should even allow for some build-up of inventories. However, as regions known for their erratic yields, which bring about high production unpredictability, become more important players in world markets, sharp price swings are likely to become more of a norm than an exception. Projections for coarse grains also point to a generally balanced situation. Although, in the case of maize, prices are seen to move closer to wheat, the faster increase in maize prices reflects demand from biofuels and feed sectors, both of which are growing, albeit at a slower pace than in the previous decade.

The next decade will witness relatively strong growth in world production of major grains. Compared to the base period of 2007-9, world production of wheat and coarse grains are projected to increase by 14% and 19% respectively, to reach 746 Mt and 1 311 Mt, over the next decade. These projected production levels are likely to match or outstrip world consumption of these grains for food, feed and industrial use.

Rice markets in closer balance

Rice markets are projected to remain substantially in balance over the coming decade, at prices inferior to the relatively high levels prevailing in 2007/08. World rice prices continued to be high in 2010, averaging USD 570 per tonne in the first three months of the year, which compares with USD 335 per tonne in 2007, prior to the price surge. With weaker import demand, the market strength largely reflects policies in the major exporting countries, tending to reduce export supplies, for instance, through export restrictions and the retention of large public stocks. Global rice inventories are projected to rebuild over the Outlook by 18% by 2019 and this should increase the stocks-to-use ratio. World rice prices are expected to weaken in the coming years, ending in 2019 at USD 422 per tonne. At that level, rice would still be almost 1.9 times the price of wheat, which compares with a ratio of 2.7 in 2009.

A continuation of policies in support of production together with renewed interest by private investors in large scale production in land and water-rich countries are expected to be important drivers of the rice sector in the coming decade. For instance, the large production gains anticipated in Myanmar, Cambodia and Laos are likely to allow these countries to emerge as important players in the export market, which would widen the choice of origins for rice trade and reduce the dependence on traditional suppliers such as Thailand and Viet Nam. Because important Asian countries are expected to engage in the commercial production of genetically modified rice by 2015, the questions of product segregation and labelling may also acquire increased prominence in the commercialisation of rice both in domestic and export markets. Compared to the base period 2007-09, world production of rice is projected to increase by nearly 15%, or 67 Mt, to reach 522 Mt by 2019. World consumption is projected to grow by 1.1% *per annum* to reach 521 Mt by 2019. Particularly fast growth in consumption is foreseen in Africa amid relatively strong expansion of population and growing preference for rice in diets. In China, the largest consuming country, consumption should continue to decline as consumers become more affluent and shift to higher protein-based diets.

High vegetable oil demand and prices drive the world oilseed economy

Following the sharp fall in prices towards the end of 2008, values for oilseeds and derived products have since moved at levels above those prevailing prior to the recent price spike. With sustained food vegetable oil demand in developing countries, robust mandates for biodiesel consumption and strong use of protein meal by the expanding livestock sector, oilseeds and oilseed products markets are expected to continue to undergo further expansion over the projection period. Compared to the levels prior to the food crisis, oilseeds and protein meal prices are projected to remain firm over the projection period as global stock-to-use ratios are expected to stay at low levels. With sustained crush demand and increasing production, oilseeds prices are expected to increase in nominal terms to USD 419/t in 2019 but to decrease in real terms (when adjusted for inflation) over the entire projection period. In line with other feed commodities, protein meal prices are expected to decrease in the early years of the Outlook period before marginally increasing over the rest of the projection period to reach USD 288/t in 2019, about on par prices at the start of the Outlook. In a context of rising food and biodiesel use, demand for vegetable oils rises faster than for oilseeds and protein meals. The renewed firmness in crude oil prices over the projection period also contribute to a gradual strengthening in oils and fats values. Vegetable oil prices are projected in nominal terms to reach USD 1043/t in 2019; well above the base period 2007-09, and levels in nominal and real terms for the decade prior to the price surge.

While still high relative to other crops, the rate of growth in oilseed production over the next 10 years will not match that observed during the previous decade. Much of the foreseen expansion will be concentrated in Brazil, the EU and Argentina, supported by land reallocation from other uses and new land entering production. The US should remain the major oilseed producer over the projection period. When compared to the 2007-09 average, world oilseed oil production should increase by 30% over the projection period. However, higher marginal costs of area expansion and growing environmental concerns in many key producing regions means that global production growth rates will be lower than over the previous decade.

At the world level, vegetable oil production should increase by almost 40% over the Outlook period. Global production of palm oil remains very concentrated, with Malaysia and Indonesia producing over 85%. Combined they are expected to reach 70 Mt in 2019. Because of environmental concerns and area restrictions the growth rates are projected below recent trends, especially in Indonesia. The share of vegetable oil consumption used for biodiesel production is estimated to increase from 9% during the base to 15% in 2019, driven by binding mandates in many countries. During the Outlook period, annual growth in protein meal consumption is projected at 1% in OECD economies, compared with 3.1% in non-OECD economies.

Despite increased production, steady demand growth underpins sugar prices

World prices of sugar, historically one of the more volatile of agricultural commodities, have been following a different rhythm of late than those of the major temperate zone crops. World sugar prices were relatively low in 2007/08 when other commodity prices surged and then reached 29 year highs in February 2010, while the others declined. The price surge was partly due to bad weather in key producing countries, such as Brazil and India. These production shortfalls lead to sharply higher imports by India and reduce export availabilities for Brazil. After spiking in early 2010, world raw and white sugar prices

have since fallen back to pre-peak levels on expectations of increasing supplies particularly in Brazil. A broader supply response is expected by 2010/11 as many countries boost their production in response to the recent high prices. Once production has time to adjust, the world sugar market is likely to switch from a deficit to an overall surplus situation, increasing export availabilities and leading to sharply lower prices as current price pressures are released.

Beyond this period, steady growth in global sugar consumption along with expanding demand over time for alternative products of sugar crops such as biofuels and particularly bioethanol, along with rising production costs in major supplying countries, are expected to lift raw sugar prices to USD 372 per tonne and white sugar to USD 439 per tonne in 2019 and to maintain them at elevated levels in nominal terms relative to prices at the turn of this century. World sugar prices by 2019, however, remain below the peaks reached at the start of the Outlook. When adjusted for inflation, sugar prices are expected to fall less rapidly than in the past. Both raw and white sugar prices are expected to continue to be variable over the projection period, particularly in response to the Indian production cycle, and this situation will also be reflected in the white sugar premium.

World sugar production is projected to increase to just over 200 Mt in 2019-20, some 39 Mt or 24% above the average level for the 2007-09 period. The longstanding production cycle in some countries of Asia, an important dynamic in the world market, will influence the growth in, and pattern of, global production in particular years. With low production costs and the potential to bring substantial additional land into production, Brazilian sugar production is expected to grow by some 11 Mt or 31% to reach 47 Mt in 2019, and this will propel exports to new heights. The growth underway in Brazil implies further concentration in sugar production and trade that is not without risks to sugar users and a potential source of additional price instability. World sugar consumption has slowed in the beginning of the Outlook in response to high prices and the lingering effects of the recession, but is expected to return to growth of an average of 1.8% *per annum* in following years to reach nearly 198 Mt in 2019-20. Global sugar stocks which are rundown at the start of the Outlook, rebuild in the near term as production outpaces consumption in response to the high prices and then gradually fall by 2019 with further strengthening of demand. The stronger demand and lower stocks-to-use, help to lift prices by the end of the projection period.

Biofuel prices set to rise as policy mandates drive demand

Weaker energy prices and lower profit margins and reduced investment following the economic crisis, slowed the expansion of the biofuel sector in 2009. As a result, when compared to their peak 2008 levels, ethanol and biodiesel prices decreased, respectively, by 6% and 26% in 2009. For the projection period, biofuel markets are projected to be highly influenced by mandates and other incentives in countries all over the world, with the US, Brazil and the EU playing major roles, respectively, on ethanol and biodiesel markets. Based on sustained political support for biofuels, the Outlook projects increasing world biofuel prices and these will also be underpinned by rising crude oil and energy prices. The world ethanol price² should follow an increasing trend to reach USD 54.4 per hl in 2019 supported by demand conditions in the US market where the Conventional Renewable Fuels mandate is assumed to be binding over the entire projection period. The world biodiesel price³ is projected to increase up to 2015 and then to remain at a plateau of

almost USD 144 per hl as second generation biofuel will increasingly become available in the EU in the latter years of the Outlook period and thus will diminish the pressure on supply globally.

Mandates calling for growing ethanol use and higher crude oil prices mean that global biofuel production should increase and is projected to reach 200 bnl in 2019, and comprising 159 bnl of ethanol and almost 41 bnl of biodiesel. These quantities are far above the average 2007-09 base levels. In the context of the new Renewable Fuels Standard (RFS2) in the United States, ethanol use for fuel is projected to increase continuously over the projection period to reach 77 bnl by 2019, but to remain below the 2019 mandate of 102 bnl. Cellulosic ethanol production is indeed only projected to expand significantly in the latter years of the projection period to reach 9 bnl in 2019 and to remain far from meeting the RFS2 32.2 bnl mandate. Ethanol use for fuel should represent an average share of 8.8% in gasoline types for transport fuel by 2019.⁴

In the case of the European Union ethanol production is mainly from wheat, coarse grains and sugar beets. It should increase to 18 bnl by 2019. Under the Renewable Energy Directive (RED) fuel ethanol use is projected to increase to reach 21.2 bnl in 2019 representing an average share of almost 8.5% in gasoline types for transport fuels by 2019. With rising domestic demand for domestic use, by a growing fleet of flexi-fuel vehicles, and for exports, ethanol production in Brazil is projected to grow by almost 7.5% *per annum*, on average, to reach 55 bnl in 2019, while ethanol exports expand to reach 13.3 bnl by the close of the projection period. As biomass based 2nd generation ethanol and biodiesel are only expected to take-off in the latter years of the Outlook, reaching respectively 7% and 6% of global production, most of biofuels are expected produced from agricultural commodities. On the trade side, Brazil will be the major international ethanol supplier. Trade of biodiesel should remain marginal; Argentina is expected to be the main supplier on international markets.

On the biodiesel market, the major player should be the EU where total biodiesel use is expected to reach almost 24.4 bnl by 2019 given mandates and tax reductions by member states and the RED. The share of biodiesel in diesel type fuels is projected to grow to 8% (almost 10% in volume terms) on average⁵ by 2019. In the US, the mandate defined in the RFS2 calls for 3.8 bnl of biodiesel to be used by 2012, driving the initial growth in US biodiesel use. The Outlook assumes biodiesel use to be held constant over the remaining years although no explicit mandate for biodiesel is legislated thereafter, the subsequent mandates referring only to advanced biofuel. Trade of biodiesel should remain low; Argentina is expected to be the main supplier on international markets. While many developing countries, especially in sub-Saharan Africa and in South East Asia, have initiated ambitious renewable energy programmes, many have been put on hold during the economic crisis, credit constraints and with the more uncertain market prospects. The OECD-FAO *Agricultural Outlook*, therefore, presents a conservative view on biofuel prospects in many of the developing countries over the projection period.

Meat markets and prices trends are driven by developments in non-OECD countries

Although there was no run-up in meat prices similar to the experience of many crop products, these prices were adversely affected by increasing meat supplies with herd liquidation due to the rapid rise in feed costs and lower demand with the onset of recession. With renewed economic growth now underway, all meat markets are set to recover quickly in the near term of the projection period. Nominal prices for beef and pork increase by 21% and 17%, respectively, to reach USD 3562/t d.w. and USD 1681/t d.w.,

respectively, by 2019, relative to the base period 2007-09. Poultry prices are expected to be on average 32% higher reaching USD 1 638/t p.w. by 2019. When expressed in real terms (i.e. adjusted for inflation) prices are expected to trend higher than those observed during the decade of the 1990s, as high feed costs will somewhat constrain the expansion of output. Beef prices are anticipated to be firm for the first half of the projection period, mainly due to a tight meat supply with the start of a herd rebuilding phase. However, expansion of meat output in following years, coupled with a reduction of imports by the Russian Federation, are anticipated to exert downward pressure on prices. Pig meat prices in both the Atlantic and Pacific markets which can be substitutes in certain markets are not anticipated to be sustained beyond 2015 due to an increase in supply from Brazil and China, both of which are experiencing high productivity gains. Sheep meat prices are anticipated to be weak during the early years, but with an anticipated reduction of sheep flocks in New Zealand, the tighter supplies exerts upward pressure on world sheep meat/lamb prices in later years of the projection period to reach USD 2 830/t d.w. by 2019. Poultry prices expressed in nominal terms are to remain relatively firm throughout the Outlook as demand continues to favour white meats.

The economic downturn triggered by the financial crisis in mid 2008 impacted severely the meat sector in 2009. Falling consumer demand and difficult access to credit affected both demand and supply. All meats were affected, although beef suffered the most compared to others, as consumers preferred cheap beef cuts and cheaper alternative sources of animal proteins. A renewed expansion of the meat sector is expected by and large for non-OECD countries from the start of the Outlook, and these will be responsible for much of the growth in the sector. Improved producer returns are anticipated to boost global meat output, with the shorter cycle of the pig and poultry sectors likely to respond rapidly to renewed demand. However, reduced cattle inventories may constrain beef production in the short term. World meat production growth is projected to increase by 1.8% *per annum* during the Outlook period, somewhat slower than in the past decade as the sector is increasingly constrained by the availability of natural resources. Meat production in the OECD area is anticipated to expand just short of 1% *per annum*, as most farmers already benefit from technological advances, and face increasingly stringent animal welfare and food safety regulations.

World meat consumption continues to experience one of the highest rates of growth among the major agricultural commodities. Much of the increase in demand is accounted for by the large non-OECD countries with their growing wealth and affluence. Poultry meat consumption in this area is projected to grow by 38%, pig meat by 33%, beef by 23% and sheep meat by 31% by 2019, when compared to the 2007-09 base period. Measured on per capita basis, meat consumption in the OECD area rises by 4% in the same period, the equivalent of one-fourth of the non-OECD countries rate of growth. World meat exports, driven mainly by increased shipments of poultry and beef, are projected to expand by 22% by 2019 relative to the base period. OECD country exports are projected to increase by slightly more than 7%, while those of non-OECD countries increase by 29% to 2019. The bulk of growth in meat traded is expected to originate largely from outside the OECD area, in particular from Brazil which will single-handedly account for nearly 60% of all the meat exported from non-OECD countries in 2019.

Dairy prices driven by stronger demand and rising supply costs

International dairy markets have experienced a dramatic rise and fall cycle in recent years. The dairy Outlook, like that for meats, is more optimistic than last year. In the course of 2009, international prices started to strengthen, rebounding rapidly at the end of the year. The strong recovery in prices was triggered by increased demand mainly from China and oil exporting countries but also by lower supplies that contracted in some regions in response to low profitability in the previous year and weather impacts on production in the Southern hemisphere producing countries. The European Union also has been restrained in the export of dairy products from higher intervention stocks. In 2010, fundamentals indicate a recovery in demand with improved economic prospects and market confidence.

The dairy sector is expected to remain one of the fastest growing sectors covered in the Outlook with strong potential as the popularity of dairy products rise mainly among developing country consumers and as demand expands with increasing affluence. The return to global economic growth and increasing population are expected to underpin international dairy markets and prices over the Outlook.

In the near term, dairy product prices are expected to be dampened by stock reduction mainly in the US and the EU. Nominal dairy prices are expected to rise steadily by 2-3% *per annum* on average, from 2012, driven by rising demand but also increasing production costs. In real terms, the longer term downward trend in prices is expected to abate, with world prices remaining relatively flat over the projection period. On average, world market prices in real terms are expected to stay 15-40% higher when compared to the decade preceding the 2007/08 peak. Butter prices in real terms are expected to register the highest gains. These are linked to continuing high energy and vegetable oil prices and to the fact that considerably less butter will be exported from countries such as the European Union or the United States. The new emerging exporters of dairy products are expected to concentrate their efforts on milk powder rather than butter which entail less sophisticated logistic requirements than butter exports.

World milk production is expected to increase by 2.1% *per annum* to reach 170 Mt by 2019 relative to the 2007-09 base period. The vast majority of the additional milk is projected to be produced outside the OECD area. World production of WMP, butter, cheese and SMP is expected to grow from the base period by 31%, 28%, 20% and 9% respectively, by 2019. The OECD area continues to dominate global cheese consumption, accounting for nearly three-quarters of the total consumption which is expected to increase by 20% over the Outlook period. In non-OECD countries demand growth is expected for all dairy products with WMP and butter consumption growing the strongest (both by 38%), followed by cheese (33%) to 2019. World exports of dairy products are anticipated to recover and grow mainly for cheese and WMP (both at 14%).

Structural change in the dairy sector is expected to intensify over the Outlook. Milk producers and the dairy industry will increasingly need to take a more proactive role to adapt to changing input markets, demand conditions, price fluctuations and increased pressure to assure quality, safety and traceability of their products. Environmental constraints and climate change related issues, and policy, will pose further challenges for the sector in the future.

Main developments in food prices

Growth in consumer food prices slows

Rising commodity prices, particularly for cereals in 2007/08 contributed to sharply increasing food prices, especially in the developing countries for less processed foods that make up a larger part of diets. While world prices have since fallen, agricultural prices and food prices inside many countries did not reflect this change with the same cadence or rhythm having remained “sticky” at high levels for an extended period of time. While the Outlook does not project food prices, there remains considerable interest in how fluctuations in commodity prices translate into changes in the cost of food. For this reason the following section discusses how food prices around the world have changed between the period of peak prices and 2009 as commodity prices have declined.

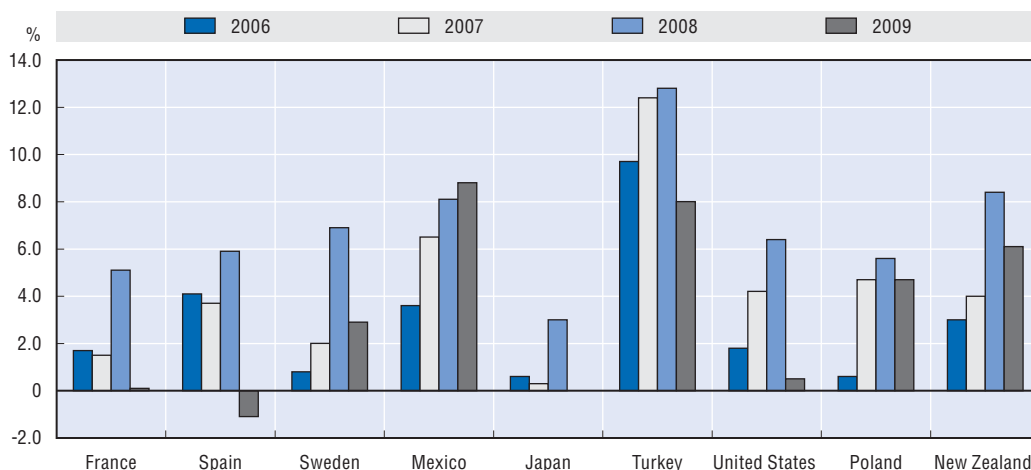
Food price inflation

Food price increases as measured by the food component of the consumer price index (CPI) slowed markedly over 2009 in most countries, though they continued in general to outpace overall inflation. In OECD countries, food prices increased by 1.6%, a significant reduction from the 6% plus increase registered in 2008. There were, however, significant differences in food price inflation among OECD as well as non-OECD countries. For most countries, food price increases slowed significantly in 2009 compared to 2008 yet for others double digit increases continued.

The food price movements discussed here refer to the food component of the CPI which measures the cost of a fixed basket of foods at the retail level. The basket reflects actual consumption patterns, thus it provides a good indication of overall change in the cost facing consumers when making food purchases. This means that food prices and commodity prices will differ substantially because retail food prices include additional costs such as processing, transportation and distribution. The share of commodities in the cost of the food basket varies across countries, for instance in the United States the account for only 20-25% of the total, with the remainder attributed to labour, energy and distribution costs.⁶ In low income countries the commodity share in food prices is likely to be larger since the share attributed to energy, distribution and processing is often smaller.

In most OECD countries food prices increased by less than 5%, while in eight countries they decreased. This is in stark contrast to 2008 when two-thirds of the OECD countries experienced increases of between 5% and 10%. See Figure 1.14 for an overview of food price increases over the 2006-09 period for selected OECD countries. In the non-OECD countries food price increases were larger than in the OECD with many between 5% and 10%, but less than in 2008. For instance, in Brazil food prices increased by 5.8% in 2009 compared to 13.1% in 2008 and in Indonesia they rose 7% compared to 17% in 2008. India also had double digit food price inflation in 2009. An equally remarkable slowing of food price increases was experienced by China, where they rose by less than 1% compared to 14.4% in 2008 and 12% in 2007. A number of countries, such as Pakistan, Bangladesh and the Russian Federation as well as a Rwanda and Ghana, however did continue to experience double digit increases. Other countries such as Sri Lanka, Guatemala and China had relatively small price increases, that is less than 3%, while countries such as Senegal and Estonia, experienced net declines after increases of 9% and 14% respectively in 2008. See Figures 1.15 and 1.16 for changes in food price indices for the years 2006-09 in selected non-OECD and African countries, respectively.

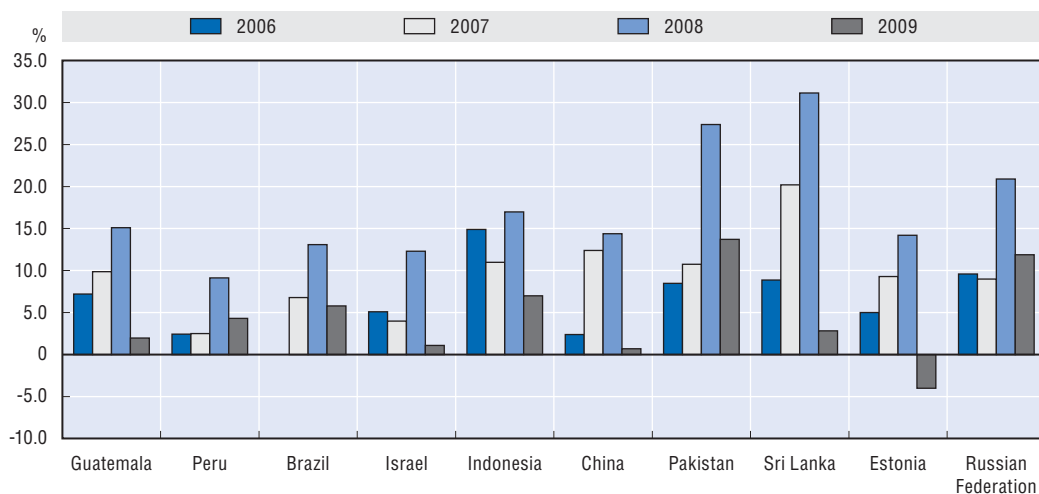
Figure 1.14. **Percentage change in the food prices:
Selected OECD countries, 2006-09**



Source: Main Economic Indicators, OECD.

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Figure 1.15. **Percentage change in the food prices:
Selected non-OECD countries, 2006-09**



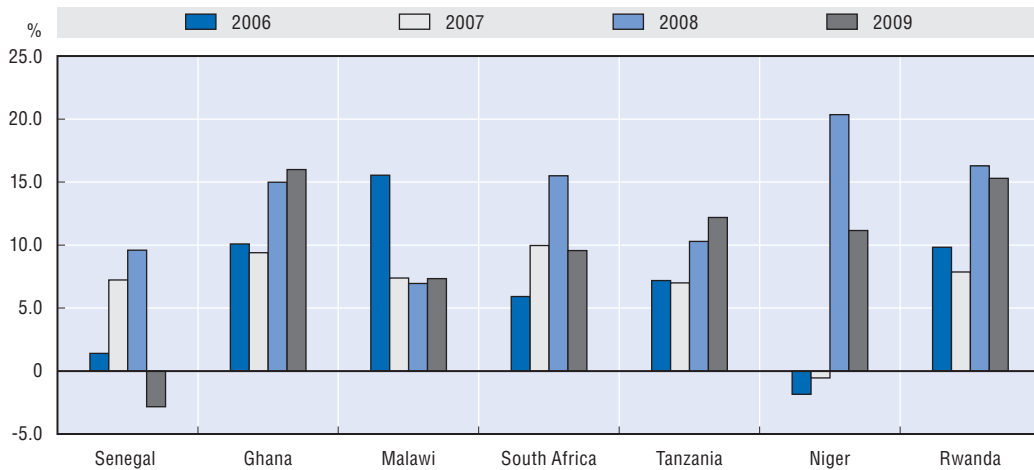
Source: National Statistical Institutes, see Annex B for data sources.

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What has been the contribution of food prices to inflation?

The weight of the food component in the CPI varies widely across countries reflecting the structure of household expenditures. In high income countries, the share of food in the CPI ranges from less than 10-20% but in the middle and low income countries it is substantially higher, generally in the 30-60% range. For example, the food component accounted for 47% of the CPI in Sri Lanka, 58% in Malawi, 55% in Tanzania, 38% in Peru and 28% in Brazil. In contrast, in the United States it is but 8.2%, 10.4% in Switzerland and Germany and 11.8% in the United Kingdom.

Figure 1.16. **Percentage change in the food prices:**
Selected African countries, 2006-09



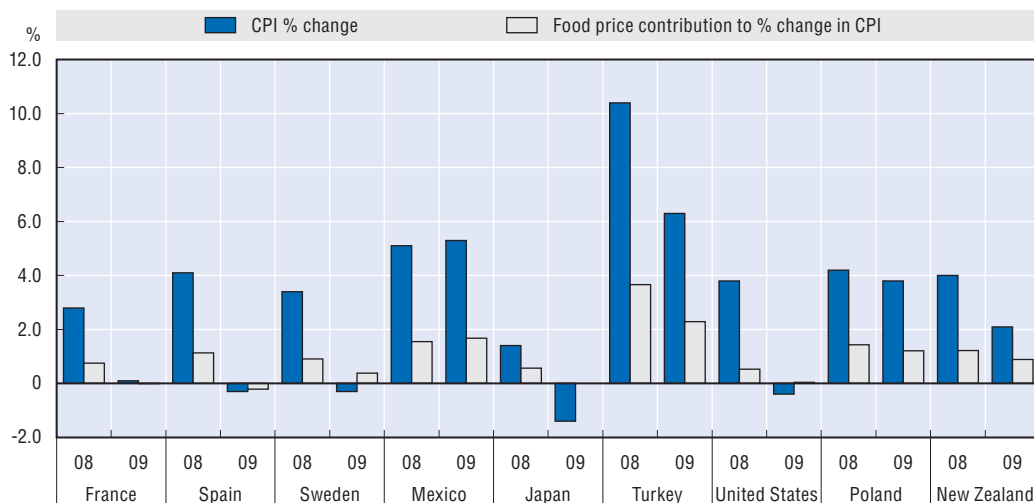
Source: National Statistics Institutes, see Annex B for data sources.

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For OECD countries the contribution of food price increases to inflation, measured by the percentage change in the CPI, has been very small this past year (2009), with contributions being generally between less than half of one percentage point and many were negative. There are exceptions, such as in Ireland, at 2.5 percentage points and Poland at 1.6 percentage points. This is not only because food price increases were relatively moderate but also because the share of food in total household expenditure is small (Figure 1.17).

For many middle and low income countries, where food expenditures account for a substantial share of household expenditures their impact on inflation can still be significant even when food prices rise only moderately. Though food price increases did indeed slow in 2009, their increase still contributed 4 percentage points to inflation in the

Figure 1.17. **Contribution of the food price changes to inflation:**
Selected OECD countries



Source: MEI and OECD Secretariat.


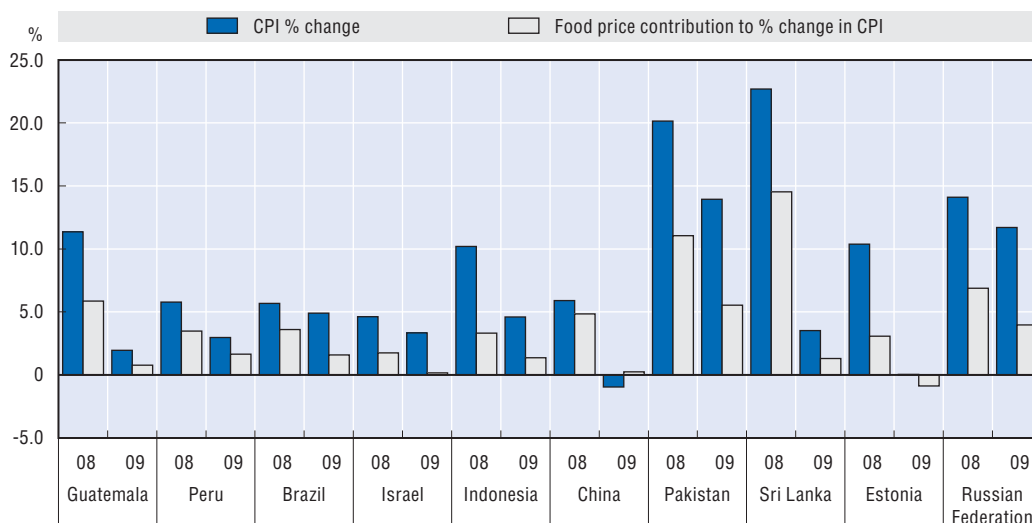
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Figure 1.18. **Contribution of the food price changes to inflation: Selected non-OECD countries**



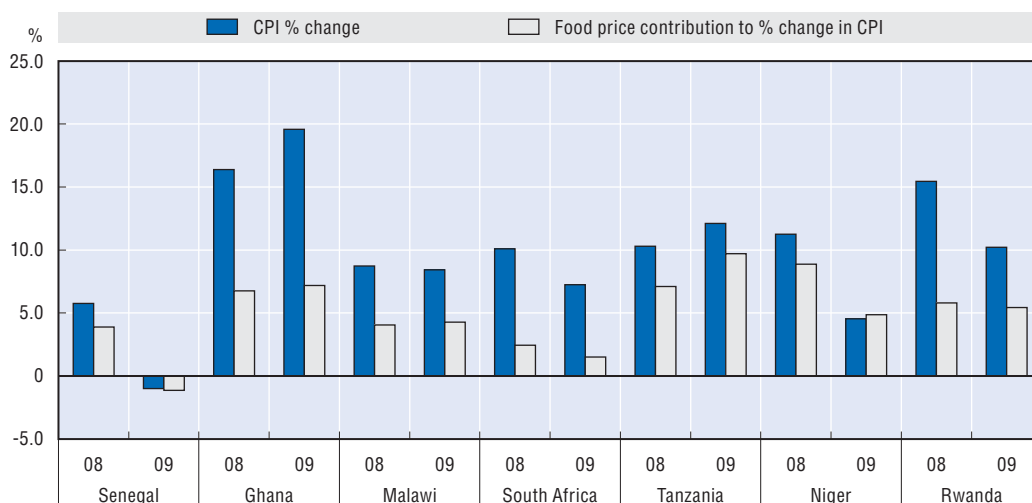
Source: OECD Secretariat.

StatLink  <http://dx.doi.org/10.1787/888932285829>

Russian Federation and 5.5 points in Pakistan. However, it only contributed less than 2 percentage points in Brazil, Peru, Guatemala, Indonesia, China, Sri Lanka and Israel. The contribution of food price increases to inflation has come down significantly from 2008 as can be seen in Figure 1.18.

For the set of sub-Saharan African countries examined, the contribution of food price increases to overall inflation remains significant as seen in Figure 1.19 even if it has come down from 2008 levels. For example, in 2009 it contributed over 9 percentage points in Tanzania and 7 percentage points in Ghana and over 4 percentage points in Rwanda, Malawi and Niger, although it was negative in Senegal.

Figure 1.19. **Contribution of the food price changes to inflation: Selected African countries**



Source: OECD Secretariat based on National Statistics.

StatLink  <http://dx.doi.org/10.1787/888932285848>

In countries where a large share of household expenditures are devoted to food, rising food prices mean that there is less money available for non-food items, such as housing, transportation, health and educational services particularly in developing countries. Because of its importance and high visibility, food price inflation continues to be a closely watched economic indicator, particularly in low income countries.

This brief overview of food price developments in OECD and selected non-OECD countries indicates that food price inflation continued to slow over 2009 and in a number of countries it declined in absolute terms. However, this should not be misconstrued to imply that food prices have fallen significantly in absolute terms.

Fisheries: Another dimension of the Outlook

While not usually associated with the Outlook report, fisheries represent an important dimension as a provider of a significant share of animal proteins in human diets and, through fishmeal, of a substantial share in animal feed rations. The increasing aquaculture industry also produces a growing and competitive demand for cereals and protein meals for use in fish feed. Fish proteins accounted for about 16% of total world animal protein supplies in 2008. Global fish production has increased about eight times in volume since 1950 to reach some 142 Mt in 2008. Capture fisheries production has stabilised at 88-94 Mt over the past decade while aquaculture production has increased significantly and now contributes 37% of the total fish production and 46% of the total fish destined to human consumption. FAO and other organisations have projected total fish production to increase by 10-15% over the next ten years (Box 1.2).

The future potential of the industry is linked to the ability of policy makers to provide a conducive policy landscape for sustainable and profitable operations. In recent years, national and international policy debates have focused on sustainable and responsible fisheries and stock rebuilding, recognising that major fish stocks are either overexploited or at very high levels of exploitation.

Issues and uncertainties

The agricultural market projections through to 2019 discussed in this chapter are a representative scenario based on a consensus view of what may happen in the future given a number of key assumptions regarding the evolution of the macroeconomic environment and exchange rates, oil and energy price levels, a continuation of existing agricultural policies, average weather conditions, longer term productivity trends and the absence of market shocks. Should any of these assumptions change, the resulting set of agricultural commodity projections would also be different. The sensitivity of the projections to crude oil price assumptions was demonstrated in a scenario in the last year's edition of the *OECD-FAO Agricultural Outlook*. The results indicated that the assumption of higher crude oil prices would push agricultural commodity prices upward, with crop prices showing a significantly higher sensitivity to oil price changes compared to livestock products. This stems from the high energy share in total crop production costs through fertiliser, chemicals and fuel prices. Moreover, the emergence of the biofuel sectors has now forged a closer link to crude oil markets particularly for grains, oilseeds and sugar. The impact of crude oil prices on the livestock sector is smaller as the higher cost of energy and feedstuffs is to a certain extent mitigated by increased availability of distilled dry grains (DDGs), a by-product of bioethanol production, which can be used in animal feed.

Box 1.2. The importance of the fisheries sector and its links with agriculture^a

The fisheries sector plays a significant role in global food security providing a valuable dietary source of proteins, minerals, micronutrients and essential fatty acids. In addition, the sector contributes to economic activity, employment and in generating foreign exchange. World per capita fish consumption is estimated at about 17.1 kg, with fish providing about 3.0 billion people with 15% of their average per capita intake of animal protein.

Fish is widely traded, with about 38% of production entering international trade as various food and feed products. Trade of fish and fishery products has significantly increased in the last decades, reaching a record USD 102 billion in 2008. In 2009, following the global economic recession, there was a contraction in demand, with a slight decline of fishery trade in both value and volume terms. However, trade is again expanding and the Outlook for 2010 is generally positive as is the longer term trend for fishery trade. Developed countries absorb about 80% of world fishery imports in value. Developing countries play a crucial role in fishery exports with a share of about 50% by value and 60% by quantity (live weight equivalent) of the total. The fishery net exports of developing countries (i.e. the total value of their exports less the total value of their imports) has shown a continuing rising trend in the last decades, growing from USD 9 billion in 1986 to USD 27 billion in 2008. These figures were significantly higher than those for agricultural commodities such as rice, sugar, coffee and tea.

At present, about 80% of total fishery production is used for direct human consumption. The remaining 20%, entirely from capture fisheries, is destined for non-food products, mainly for production of fishmeal and fish oil, as well as direct feed in aquaculture and livestock. In 2008, total world fish production (capture and aquaculture), excluding aquatic plants, reached 142 Mt. It should be mentioned that this figure might underestimate the effective amount due to the incomplete recording of subsistence fisheries as well as of illegal, unreported and unregulated catches. Estimates for 2009 show a slight increase from the previous year. Compared with production figures a decade ago, the current amount represents a growth of more than 28 Mt. This additional supply is mainly due to increases in aquaculture production. Capture fisheries production, which reached its peak in 1996 with 93.8 Mt, has stabilised within a range of 85 and 94 Mt, with variations mainly caused by the El Niño climate pattern phenomenon. In the last three years, capture fisheries production remained close to 90 Mt. Forecasts indicate that any major increase in future supply will come from aquaculture. Aquaculture production is already playing a substantial role in supplying fish for human consumption, growing from a share of 17% of per capita fish consumption in late 1980s to an estimated 46% currently. It is estimated to reach 50% within the next decade.

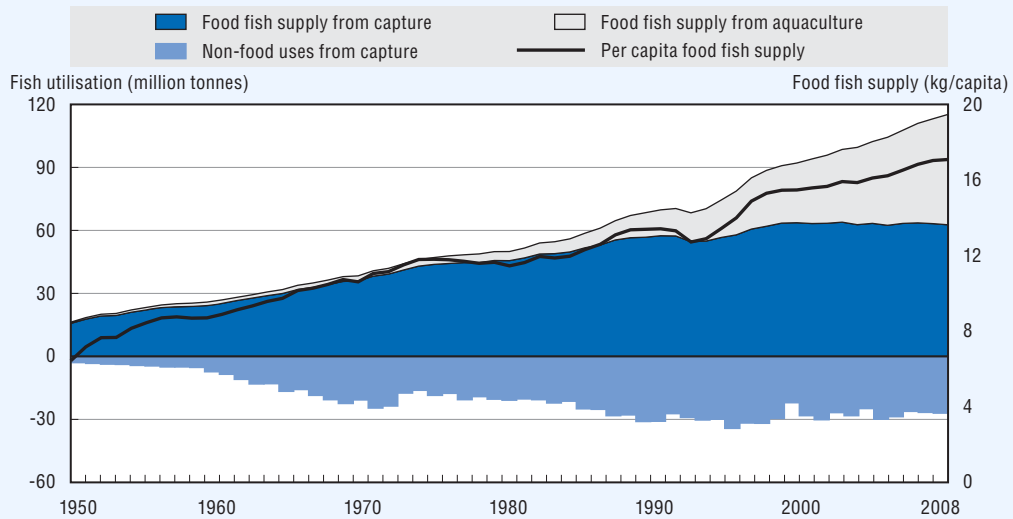
With an annual average rate growth of about 9% in the last two decades, aquaculture is currently growing faster than all other food-producing sectors. Aquaculture is expanding in all continents, in new areas and species, intensifying and diversifying the product range. Although the rate of increase in aquaculture production has slowed to about 6% per year in the 2000s, growth prospects for the sector are still good. Several more species and new product forms will be commercially produced in the near future and further technological development will contribute significantly to improve productivity, yield, quality and consumer acceptability. However, it is also evident that, in many countries, significant challenges remain in order for the aquaculture sector to reach its full potential and become economically, environmentally and socially sustainable. Important factors which will have a future impact on the aquaculture industry include climatic changes, environmental issues, access to sites and water, raw material supply for feed, pandemics and fish health management, integration and ownership structures, governance, food safety and traceability. The OECD Workshop on Advancing the Aquaculture Agenda, held in April 2010, underscored the importance of ensuring a solid governance system for the sector with a view to ensuring future growth.

Fisheries, and in particular aquaculture, interact in several ways with agriculture. One evident example is in integrated farming,^b but more important is their impact on ecosystems, markets, products and prices, as well as on innovations and technology. Competition between the fishery and agriculture sector may arise for water and land resources, especially for irrigated agriculture, as well as on the availability and relative efficiency on the use of feeds between terrestrial animals and farmed fish. Fishmeal and fish oil obtained from capture fisheries and from fisheries by-products are used as feed in aquaculture as well as in the feed rations of pigs, poultry, ruminants and pets. With the expansion of aquaculture, supplies of fishmeal have been largely directed to this sector, as major constituents of aquatic carnivorous/omnivorous species feeds, diverting away from livestock, which now mainly use fish meal in starter and breeder diets for poultry and pigs. It is estimated that in 2007 aquaculture consumed about 68% of world fishmeal and 81% of world fish oil supplies. The growth of the aquaculture industry and the increasing competition with

Box 1.2. The importance of the fisheries sector and its links with agriculture^a (cont.)

the livestock sector generated upward pressures on prices of fishmeal and fish oil and has also led to an increasing demand for additional or substitutive sources of feed. Livestock and agriculture by-products, used traditionally to feed terrestrial animals, are now increasingly employed by the aquaculture sector, especially for the farming of non-carnivorous aquatic species. Continued growth in demand for livestock and fish products, as well as for biofuels obtained from agriculture by-products, has raised concerns over the competition for feed supplies, in particular for the finite fishmeal and fish oil resources, and the impacts of such growth on the environment and on the aquaculture and livestock developments.

Figure 1.20. World fish utilisation and supply

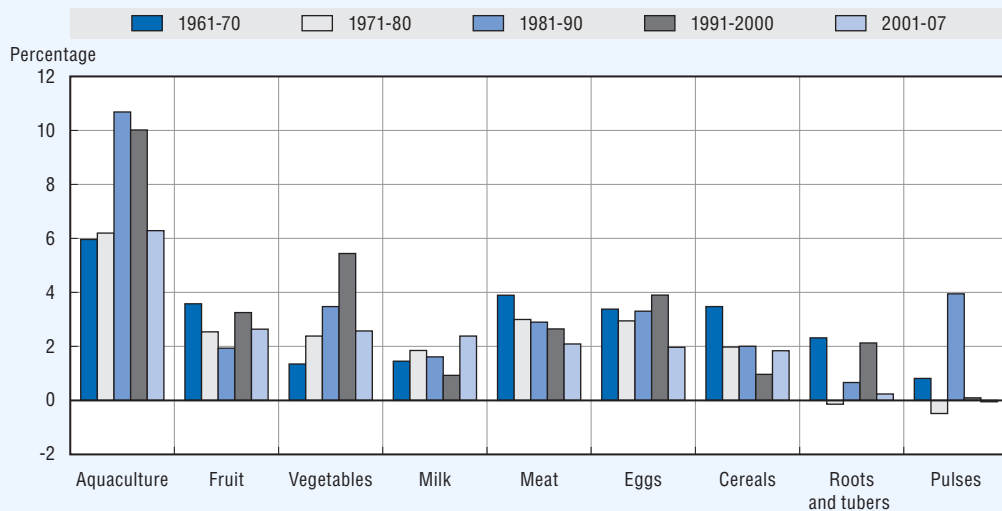


Source: OECD and FAO Secretariats.

StatLink <http://dx.doi.org/10.1787/888932286000>

Figure 1.21. World production (quantity)

Aquaculture versus selected agricultural products – Average annual percentage growth rate



Source: OECD and FAO Secretariats.

StatLink <http://dx.doi.org/10.1787/888932286000>

- a) All statistics quoted in this box are from FAO, Fisheries and Aquaculture Department.
- b) The term “integrated farming” refers to integrated resource management of different activities, such as crop, livestock and fish subsystems. When involving aquaculture, it is the concurrent or sequential linkage between two or more activities, of which at least one is aquaculture.

A number of major uncertainties remain. At the beginning of the Outlook, the lingering effects of the global financial market turmoil and the deep economic recession are intermingled with the onset of a strong recovery in the large developing countries and a more fragile turnaround in much of the OECD area. This has been made more fragile by the unfolding Greek crisis and fears of contagion to other countries with large budget deficits in Europe that now threaten to slow the global recovery. Many OECD countries are starting to address excessive budget deficits to restore fiscal balance and to soak up excess liquidity in their economies in order to prevent asset bubbles and inflation. The issue for governments for 2010 and beyond is to devise exit strategies as to when and how to reduce the liquidity and fiscal stimulus without reversing the nascent recovery. With globalisation and closer economic and financial integration between nation states, many external factors such as variable oil and energy prices, freight rates, inflation, interest rates, credit availability and exchange rate changes can have profound impacts on the competitive positions of national agricultural industries and their trade performance. Among other developments are the continuing migration of production to areas of the world which suffer higher yield variability together with more frequent weather disturbances associated with climate change may render global yields much more variable, leading to greater instability in production and trade flows. Finally, future changes in agricultural and trade policies and the eventual outcome of the current Doha Round of international trade negotiations and bilateral agreements that may be under consideration can be expected to have an important influence on agricultural markets. All of these factors play an ever increasing role in commodity price formation suggesting a continuation of volatile and uncertain agricultural commodity markets.

The past decade has been one of constant change, altering the environment in which the sector operates. The most recent years have been characterised by significant price volatility and a sharp rise in the numbers of malnourished people. Coming years will also be characterised by continuing economic, demographic, market and environmental pressures that will bring both opportunities and challenges to farmers, food businesses, consumers and governments. Some of the issues that were identified as major challenges:

Food security: Hundreds of millions of people remain food insecure. Although the world now produces enough to feed its population, the number of undernourished has increased since the mid 1990s, reaching more than one billion persons in 2009, in part as a result of recent price spikes and the global economic recession. Paradoxically, many of the world's food insecure people are themselves farmers. The population and income dynamics in emerging economies will continue to increasing demand for food in the decades to come, while the growing biofuels market is a new source of demand impacting on food markets through related land use changes. Production and productivity will need to be increased while a well functioning, rules-based multilateral trading system will be crucial in ensuring food can move from where it can be abundantly produced to where it cannot. These issues are further discussed in Box 1.3.

Climate change: There is a broad scientific consensus that less-resilient agricultural production areas will suffer the most, as temperatures rise further, for example in semi-tropical and tropical latitudes, and as already dry regions face even drier conditions. Climate change may also increase food safety risks that might result from heat-related and water borne diseases with temperatures rising and more flooding. Production variability and uncertainty of supplies are expected to rise as a result of likely increases in the frequency of

Box 1.3. Food security remains high on the international policy agenda

The *World Food Summit on Food Security*, held in Rome on 16-18 November 2009, called for action to reduce hunger and malnutrition. Objectives, cited in the Summit's Declaration included better co-ordination at the global, regional and national levels, a reversal of the decline in domestic and international funding for agriculture and a proactive approach to the challenges of climate change. As background to the Summit, the FAO released a number of background studies and held a high-level expert forum in October 2009 on *How to Feed the World in 2050*.

The challenge is to feed a growing, more urban and, on average, richer population while adopting more efficient and sustainable production methods and adapting to climate change. World population is expected to grow by 2.3 billion people between 2009 and 2050 with nearly all this growth from developing countries. The population in sub-Saharan Africa is expected to grow the fastest, by some 114%. It is estimated that feeding a population of 9 billion would require a 70% increase in global food production between 2005-07 and 2050. Production in the developing countries would need to almost double. Of course, the need to increase output would decline significantly if progress could be made in reducing production losses (e.g. from disease, pests, storage) and food waste (e.g. during processing, transportation and consumption). The projections of this Outlook indicate global production growth which is on track with estimated longer term food requirements.

Demand for cereals for food and feed is projected to rise by one-third to 3 Bt by 2050, and possibly higher due to a growing liquid biofuel market. Net cereal imports into the developing countries would increase almost three-fold to nearly 300 Mt by 2050, some 14% of their total cereal consumption. Demand for more income-responsive vegetable oils, meats and dairy products are expected to rise even faster. Livestock is one of the fastest growing sub-sectors in agriculture with over 80% of the projected growth in the next decade taking place in developing countries, particularly in Asia and the Pacific (especially China) and Latin America, outpacing growth in the OECD area by a factor of 2:1 over the next decade.

To support the necessary expansion in output in developing countries, FAO estimates the required average annual investment in primary agriculture and necessary downstream services (e.g. storage, processing) at USD 209 billion in 2009 prices (or USD 83 billion net of depreciation), much of which would come from private sources. Still, this amount represents a 50% increase from current levels and does not include the public investments required in such areas as roads, irrigation, electricity and education. In general since the 1970s, those countries with higher net investment per agricultural worker have been more successful at reducing hunger.

As suggested in the 2009 Outlook report and supported by the FAO Food Summit background studies, the technical ability to produce enough food can be achieved, given sufficient investment and sustainable resource management. However, this alone will not alleviate hunger which is primarily a question of poverty. It is more a problem of food accessibility than of food availability. A comprehensive approach to food security needs to include investments to promote income generating activities for the poor and thus improve their ability to purchase food. Importantly, the payoff from hunger reduction in terms of economic growth can be substantial. Throughout the 1990s, the value-added per worker, in countries where 2.5% of the population was undernourished, was 20 times higher than in countries where more than 35% of the population was undernourished.

Sources: www.fao.org/wsfs; www.fao.org/wsfs/forum2050/wsfs-forum and www.oecd.org/agriculture.

extreme events such as droughts and floods. In more extreme cases, production zones might shift. It was also recognised that agriculture will be required to make an important contribution to reducing greenhouse gas emissions (see Box 1.4).

Pressure on resources: Agriculture must increasingly compete with other parts of the economy for the available land, water, mineral and energy supplies. Water scarcity is a particular concern, with agriculture currently accounting for 70% of world freshwater withdrawals (45% in OECD countries). Some predictions suggest that 36 countries with a combined population of 1.4 billion will be either cropland or freshwater scarce by 2025. Depletion of non-renewable resources (including oil and minerals) and degradation of arable land add to the resource pressures. Increased efforts to better manage water resources including through water prices that reflect scarcity of supplies is urgently required. Some countries are now making foreign investments to secure food supplies from other countries where resource constraints are lower, but guidelines for such investments are critical to respect local economies.

Global food chains: The food industry is becoming more vertically integrated, globalised and concentrated. These developments have enabled the industry to respond well to a wide range of changing consumer preferences, while maintaining relatively low prices. But there are also concerns about their growing market power, about price transmission, transparency and what is a “fair” distribution of profits across the food chain. Both public food safety standards and private quality standards have been raised in response to consumer demands, but these imply higher compliance costs and some farmers, particularly in developing countries, may have difficulty in meeting the more stringent standards.

Innovation: The capacity of the global food and agriculture system to continue to provide adequate supplies for food, feed, and non-food uses depends in large part on technology and innovation. In some cases there remains considerable scope for improving productivity through more widespread adoption of available technologies. Progress can also be made to make better use of what is produced – as much as one-third of food “disappearance” has been estimated as “waste”. Waste occurs at the farm level, in the storage and distribution system, in food service, and at home. Governments, in partnership with the private sector, need to increase investment in research and development, while keeping markets open to allow the free flow of innovation and technology. A major challenge remains in the development and approval of genetically modified crops, and the extent to which asynchronous action by Governments results in trade diversions among countries and regions.

The OECD Committee of Agriculture met at Ministerial level on the 25-26 February 2010 and discussed many of these same issues. What Ministers’ had to say on these different issues is covered in the Ministerial *Communiqué* from the meeting, an extract of which is shown in Box 1.5.

Box 1.4. To what extent is climate change included in the *Agriculture Outlook*?

Climate change refers to a change in weather patterns over relatively long periods of time, usually at least a decade. While recent climate change concerns are mainly related to increasing global mean temperature (global warming), in the broader sense it encompasses changes and variability in temperature, precipitation, atmospheric pressure, humidity and wind. Climate change also affects the frequency of storms, floods, droughts and other extreme weather events.

The global warming hypothesis is supported by a statistically significant increase in average global temperatures over several decades, as measured by a variety of sensors based on land, sea and satellites.^a According to the Intergovernmental Panel on Climate Change (IPCC) in its fourth assessment report, “Warming of the climate system is unequivocal”.^b Climate change is expected to impact significantly on agriculture as weather evolves in the future. While science is not yet capable of providing precise predictions, there is wide agreement in the scientific community on some climate change trends.

Average temperature increases will be unevenly distributed around the globe. The IPCC projects that warming will be greater at the equator and the poles than at the mid-latitudes.^b In very general terms, this may translate into more favourable agricultural conditions for temperate regions (e.g. warmer, longer growing season), but less favourable conditions (e.g. heat stress) in the already hot tropics.

Rising temperatures will accelerate the hydrological cycle,^c changing the temporal and spatial distribution of fresh water. Global water availability is likely to remain constant. While in the short-term the accelerated melting of glaciers may result in increased risk of floods, over the longer term it implies reduced flows to areas which rely on such water supplies. It is also conceivable that even if annual precipitation remains unchanged, rainfall may occur more frequently when it is not needed (e.g. during the summer harvest rather than in winter and spring).

Higher CO₂ concentrations are expected to have a positive “fertiliser effect” on plant yields, especially rice, wheat and soybeans. However, this hypothesis is largely based on laboratory experiments and may be less in reality. Moreover, a number of important crops like maize and sugarcane belong to a plant family where this fertilisation effect is smaller, even in the laboratory.

All these factors will have both positive and negative consequences for crop and livestock production, depending on many environmental conditions prevailing in a particular geographical location, production management systems, and the impact of mitigation and adaptation policies and practices. However, most analysis of climate change focuses on 25-50 year time horizons so it is difficult to incorporate such analysis into a medium-term *Agricultural Outlook*. There are no climate change variables or equations in the Aglink-Cosimo model used to generate projections for the OECD-FAO medium term *Agricultural Outlook*. To date, there are no explicit links between the physical models used to access climate change and the economic models used for market analysis, although this is an area likely to be addressed in the near future.

While the OECD-FAO medium-term projections may implicitly incorporate certain elements of climate change for some regions, this impact cannot be separated out or quantified. One of the assumptions underlying the projections is “average” weather or growing conditions in the different countries and regions. Climate change impacts, through changed average weather conditions, would be expected to appear through yield performance/variation and average pasture conditions. The initial phase of the Outlook process involves commodity experts adjusting projected crop yields and output, based on a number of factors such as input use, innovation, technology. National experts from all major producing regions respond to a detailed, commodity-specific questionnaire so that global projections are built up from country level analysis.

While it may not be possible at this stage to provide quantitative estimates of the medium-term impact of climate change on agriculture, this will be a topic of increased analysis over the next few years. Agriculture Ministers, at the February 2010 meeting in Paris noted that climate change presents challenges and opportunities for the agricultural sector in reducing green house gas emissions, in carbon sequestration, and the need for adaptation. They asked for further analysis of the likely impact of climate change on agriculture and on agro-forestry, the role of the sector in mitigation and adaptation, and the appropriate policy responses.^d

a) NASA Goddard Institute for Space Studies, <http://data.giss.nasa.gov/gistemp/>.

b) IPCC Fourth Assessment Report: Working Group I: The Physical Science Basis.

c) World Meteorological Organization, www.wmo.int.

d) The Ministerial Communiqué is available at: www.oecd.org/agriculture/ministerial.

Box 1.5. 2010 OECD Agriculture Ministerial Meeting

Ministers' discussions were wide-ranging and forward looking. A focus of discussion was the question of food security. Will the food and agriculture system be able to respond as population growth causes demand for food to increase, in a world where pressure on land, water and other natural resource is already evident and where climate change will bring additional challenges? The task for governments is to make sure that the right policies and institutions are in place.

Ministers agreed to build on and complement the policy principles agreed in 1998 acknowledging that the main priority is the need to provide an adequate supply of safe and nutritious food, on a sustainable basis, for the world's growing population. Specifically, **Ministers recognised:**

- a) That an **integrated approach to food security** is needed involving a mix of domestic production, international trade, stocks, safety nets for the poor, and other measures reflecting levels of development and resource endowment, while, poverty alleviation and economic development are essential to achieve a sustainable solution to global food insecurity and hunger in the longer term.
- b) That "**green growth**" offers opportunities to contribute to sustainable economic, social and environmental development, that agriculture has an important role to play in the process, as do open markets that facilitate the sharing of technologies and innovations supportive of green growth, and that, in this context, care needs to be taken to avoid all forms of protectionism.
- c) That **climate change presents challenges and opportunities** for the agricultural sector in reducing green house gas emissions, in carbon sequestration, and the need for adaptation.

and Governments should ensure that:

- d) Farmers and food suppliers, in developed and developing countries, are able to respond effectively to changing consumer and societal demand, and that the transmission of price signals along the food chain is improved locally, regionally and internationally.
- e) The necessary institutional, regulatory and policy frameworks are in place to enable markets for food and agricultural products to function efficiently, effectively transparently and fairly.
- f) Appropriate policies are developed to facilitate the management of risk at the farm and farm household levels and throughout the agro-food sector, including, where appropriate, in response to the impacts of extreme price volatility on farmers, while maintaining an efficient distribution of responsibilities between private and public actors.
- g) Policies for the food and agriculture sector are coherent with general macroeconomic, trade, industrial, environmental, energy, consumer and social policies (including health and nutrition), and that there is coherence between country policies and efforts to assist developing countries.
- h) Trade play a role in matching global supply and demand, as a reliable source of supply for countries dependent on imports and a reliable outlet for competitive suppliers, through an efficient well-functioning rules-based multilateral trading system, to which an ambitious, balanced and comprehensive conclusion of the Doha Development Agenda would be an important contribution;
- i) Policies are supportive of the efforts of farmers and other participants in the supply chain to effectively manage natural resources to supply sustainably produced commodities.
- j) Incentives and disincentives can be effectively and transparently designed to reflect the total costs and benefits to society, with a view to improving environmental performance, in consistency with multilateral trade rules and commitments; facilitating adaptation to and mitigation of climate change; allowing the food and agriculture system to respond to resource pressures particularly those affecting land and water; reducing losses and waste in the food supply chain; ensuring the provision of public goods and services such as rural amenities, biodiversity, maintenance of landscape and land eco-system functions and contributing to the development of rural areas.

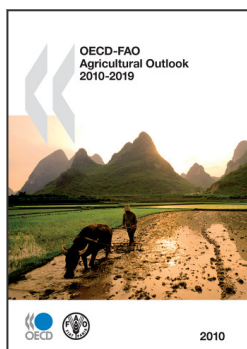
Box 1.5. 2010 OECD Agriculture Ministerial Meeting (cont.)

- k) There is a supportive investment climate in particular with respect to foreign direct investment in emerging and developing countries, in line with internationally agreed guidelines.
- l) Innovation, including transfer of technologies, is fostered in order to increase productivity, enhance efficiency, improve sustainable resource use, respond to climate change and reduce waste including through balanced protection of intellectual property rights, and a regulatory environment conducive to innovation and new technology, and to public-private partnerships.
- m) Consumer protection is enhanced through further development and implementation of efficient, science-based food and feed safety standards, consistent with international agreements.
- n) Policies are explicitly connected to specific objectives or intended beneficiaries, while also limiting the administrative burden on the sector so that total costs to the public are minimised, and that policies are monitored and evaluated regularly for continued relevance, cost-effectiveness and efficiency.

Note: The text is extracted from the *Communiqué* from the Ministers whose complete text can be consulted at www.oecd.org/agriculture/ministerial.

Notes

1. One aggregate measure is the net production index, which is a summary measure of the growth in gross value of production of all commodities included in the Outlook, net of seed and feed costs which are internal to the sector, all measured at constant international reference prices of 2004-06.
2. Brazil, Sao Paolo (ex-distillery).
3. Producer price Germany net of biodiesel tariff.
4. All biofuels use are expressed on the basis of energy contained unless otherwise specified.
5. All biofuel use shares are expressed on the basis of energy contained unless otherwise specified.
6. With the decline in commodity and oil prices, food price increases across the globe subsided in 2009 compared to 2008.



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