

Chapter 4

Cereals

Market situation

Despite record cereals production in 2011, international prices remained elevated. The bumper crop helped to replenish stocks and moderate prices in the second half of 2011, but a weakening US dollar and low freight rates bolstered export prices in early 2012.

Grain prices were further supported by excessive cold across much of Europe and the Commonwealth of Independent States (CIS), and the excessive dry conditions that prevailed in the southwest United States and portions of South America. A tight maize supply situation, following last year's below trend yields in the United States, contributed to the increase in coarse grain prices while deteriorating conditions of the South American soybean crop put additional upward pressure on markets. Early reports revealed the intention of United States farmers to plant 38.8 Mha of maize, a level not seen since 1937, but price movements during planting showed the market bidding for more oilseeds (soybeans) area which could pull plantings down from the initial intentions. Given the low level of maize inventories, markets are expected to remain sensitive to the eventual size and progress of the maize crop in the United States, the world's largest producer. Despite significant losses due to floods in the second half of 2011, especially in Thailand, outstanding yields in India and several other major producers lifted world rice production in 2011. Rice prices over the year were very much influenced by the implementation of new policies in Thailand and India.

Projection highlights

- By 2021, wheat prices in nominal terms are projected above the previous decade, but below those prices seen during the last two years. Prices in real terms are expected to remain flat to moderately declining from 2012. Coarse grain and rice prices follow a similar pattern with nominal prices dipping in 2012, and then modest growth for the remainder of the period (with declining real prices).
- World cereal production is expected to grow in 2012 as a response to higher returns, increasing gradually during the rest of the projection period. Stocks-to-use ratios will remain below historical averages, potentially adding to price volatility.
- Harvested area for cereals continues expanding, but at a slower pace than in the past. Yield growth prospects are less optimistic and mostly concentrated on maize and rice.
- Trade of wheat and coarse grain increases at a slightly slower pace than in the past. The United States keeps its leading position as maize exporter. The CIS becomes an even more important source of wheat exports by 2021 than in the base period.¹ Trade of rice is expected to increase faster than in the past driven by growing shipments from LDC Asia, in particular Cambodia and Myanmar, and by increasing imports by African countries. Nevertheless, trade in rice remains small compared with other grains.

Market trends and prospects

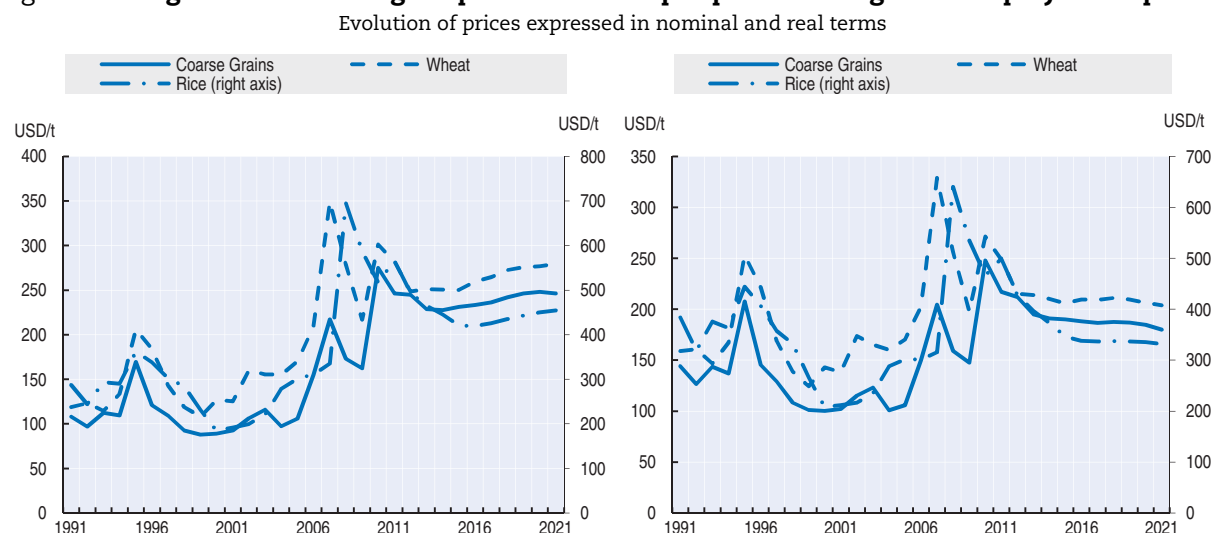
Prices

The benchmark US wheat export price is expected to average slightly lower in 2011 (USD 279/t for June/May marketing season) from the high 2010 level (USD 301/t) following a rebound in world wheat production in 2011. The benchmark US maize price is also likely to decline in 2011 (USD 246/t), though more modestly compared to wheat. For 2012, wheat prices are projected to further decrease (USD 248/t), remaining at a higher level than in the past, mainly due to additional pressure on input prices, with crude oil prices at USD 110/barrel of Brent. This is also the case for coarse grain prices, with a 2012 price forecasted at USD 245/t. The current situation reveals historical low wheat to maize price differential between 1.01-1.02.

By 2021, wheat prices are projected to approach USD 279/t in nominal terms², increasing over the projection period at 1.5% per year, supported by strong energy prices and spillover effects in coarse grain markets. They consolidate at about 15% above the historical average. In real terms, however, wheat prices remain at around the same levels as in the past decade (Figure 4.1).

Similar to wheat, coarse grain prices are projected to increase only in nominal terms over the projection period, to reach USD 246/t by 2021. In real terms, they are projected to stagnate. An expected trend in world markets is a continued narrowing of the price differential between wheat and maize, with the wheat to maize price ratio falling below 1.2 by 2021, compared to 1.4 in the previous decade. The primary driver is an anticipated tighter supply and demand balance for maize relative to wheat. The main reason for this development is the fact that the overall demand for wheat is for food, which tends to be less elastic than demand for maize which is largely for feed and more recently biofuels.

Figure 4.1. **Tight stocks and high input costs underpin prices throughout the projection period**



Note: The left figure shows nominal prices and the right figure shows real prices. The world reference price for wheat is the No. 2 Hard Red Winter, USA f.o.b. Gulf Ports. For coarse grains, it is the US maize price No. 2 Yellow, f.o.b. Gulf Ports and for rice, it is the Thai white 100% B, milled, f.o.b.

Source: OECD and FAO Secretariats.

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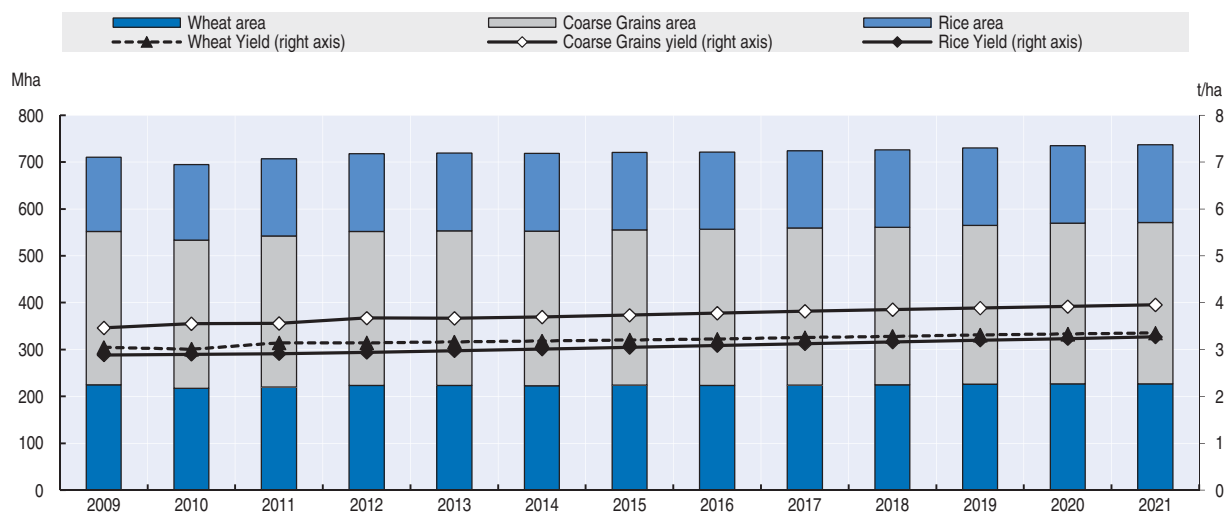
World rice prices started to increase strongly in the summer of 2011 due to the Thai government's new support policy, and then dropped rapidly pressured by the return of cheap Indian rice on the market (Figure 4.1). Rice prices are projected to decline gradually in real terms, reflecting the ample supply of a few rice exporting countries in Southeast Asia combined with slowing import demand, especially by those countries that are targeting rice self-sufficiency. The ratio of rice to coarse grains prices is projected to fall to 1.8, lower than the 2.5 observed in the last ten years, while the rice to wheat ratio is expected hover around 1.6, closer to the 1.8 value seen in the past decade. In nominal terms, the benchmark rice price looks set to fall to USD 454/t in 2021.

Production of cereals

World wheat production is projected to reach 761 Mt by 2021, about 12% higher than in the base period 2009-11, but with slower annual growth relative to the previous decade (Figure 4.3). By 2021, the wheat area is projected to be 3% higher than the base period. The largest area expansions are projected for the Russian Federation, Ukraine and Kazakhstan. Average global yield growth for wheat is projected at only 0.7% p.a., a slowing from historical trends and influenced by lower average yields in regions of area expansion (Figure 4.2). As highlighted in Chapter 2, how to improve productivity is a critical issue to be addressed in the coming years.

Figure 4.2. **Less expansion in area while yield growth also slows**

Evolution of global cereal harvested area and yields over the projection period



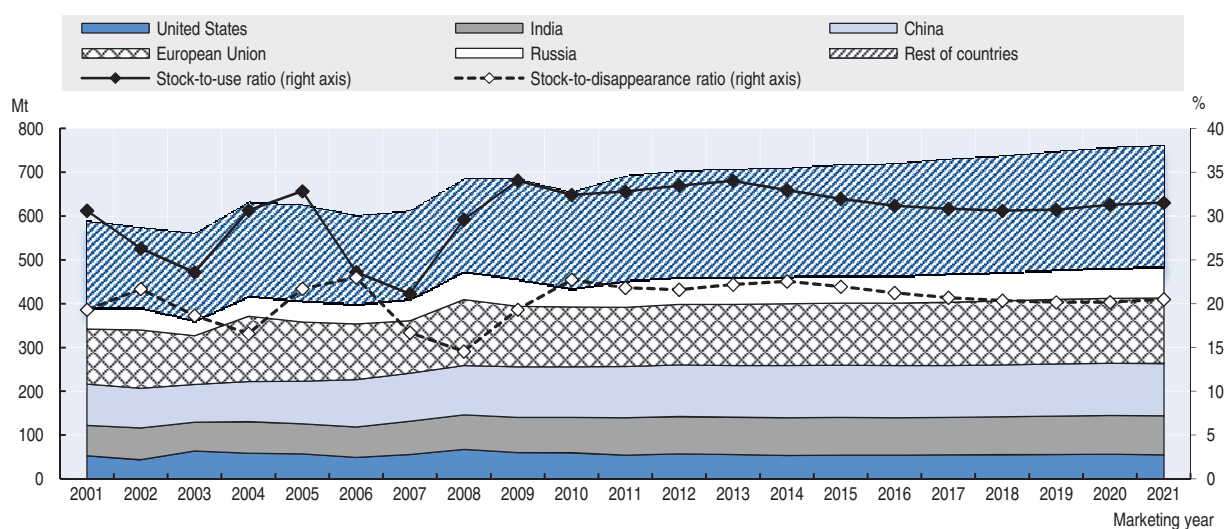
Note: The first three columns (2009, 2010 and 2011) include historical information.

Source: OECD and FAO Secretariats.

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Wheat stocks are ample at the beginning of the projection period, exceeding the five-year average, and increase slightly over the projection period, reaching 219 Mt in 2021. Most of the build-up with respect to the base period is expected to occur in CIS countries. At this level, the ratio of wheat stocks of major exporters to its utilisation will approach 32% in 2021, which is slightly below the base period but 10 percentage points higher than in the 2007/08 food crisis period. Similarly, the ratio of major exporters' wheat stocks-to-disappearance (i.e. defined as the domestic utilisation plus exports in major exporting countries³) is projected to approach 21% (Figure 4.3).

Figure 4.3. World wheat production and stock ratios



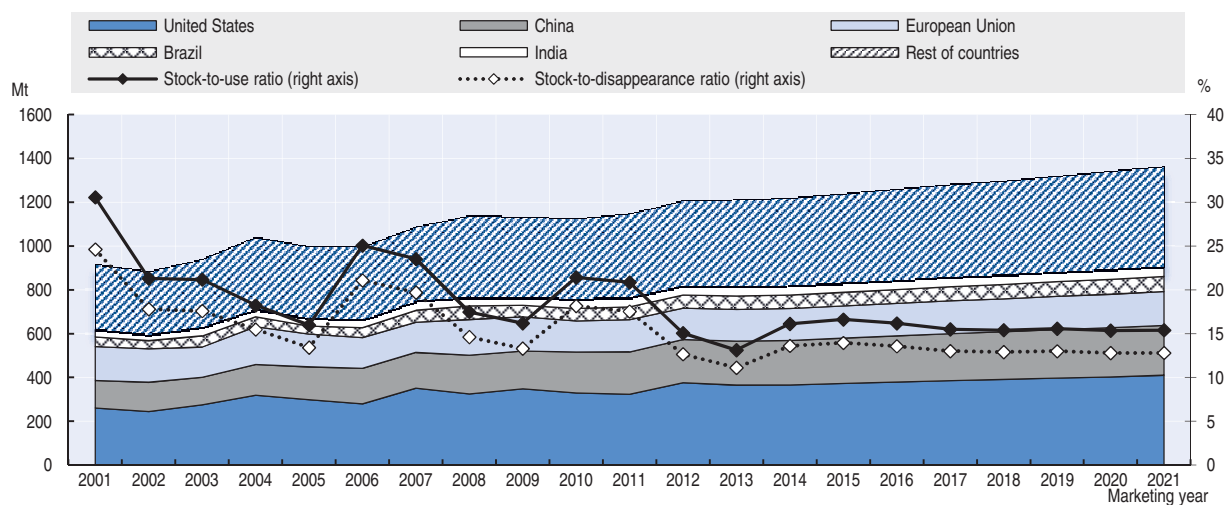
Source: OECD and FAO Secretariats.

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World coarse grain production is expected to reach 1 359 Mt by 2021, up 20% from the base period (Figure 4.4), with significant increases projected for Argentina, Brazil, China, the Russian Federation, Ukraine, and the United States. The increase in the total coarse grain area is projected to be more significant than other crops by 2021, up 7% from the base period, with notable increases in Brazil, Argentina and Canada, as well as several Sub-Saharan African countries. Coarse grain yields are projected to increase by 0.9% p.a., well below historical trends (Figure 4.2).

World stocks of coarse grains are projected to rise by 12% from its critically low level of 205 Mt in the base period. Most of the build-up is projected to occur in the United States and Brazil. The ratio of major exporters' coarse grains stocks to its utilisation is projected

Figure 4.4. World coarse grain production and stock ratios



Source: OECD and FAO Secretariats.

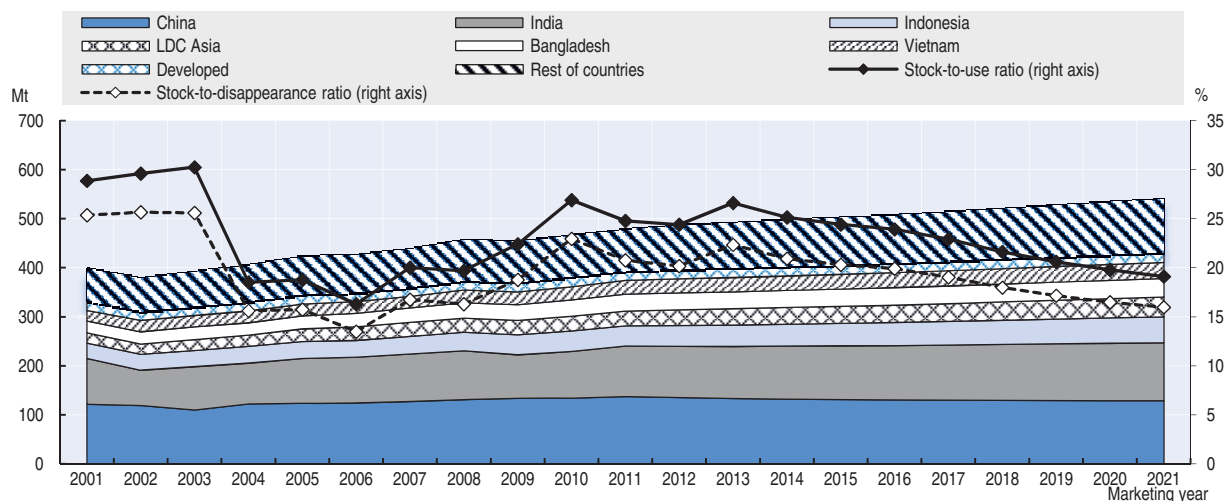
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to slightly recover to 16%. More importantly, the ratio of major exporters' stocks-to-disappearance of coarse grains is projected to remain at 13% through the projection period.

In 2021, world rice production⁴ is projected at 542 Mt, roughly 75 Mt higher than the base period (Figure 4.5). The annual growth rate is projected at 1.2%, significantly slower than 2.5% p.a. in the previous decade. Yield growth (1.2% p.a.) is the main driver behind the global production increase, as little change in total rice area is anticipated. Developing countries are expected to account for virtually all of the projected production increase, particularly India, Cambodia, Myanmar and African countries. Among large producers, China is expected to decrease output by 6 Mt, as the sector responds to declining domestic consumption and strong competition for land and water. Rice production by developed countries is anticipated to increase by a modest 0.3% p.a. Rice output in Japan and Korea is to remain on a declining trend, while in the European Union it is projected to remain stable around the base year level (1.7 Mt) over the whole projection period. Assuming a return to a more favourable rainfall pattern, production is anticipated to recover in Australia. A steady growth of 1.3% is also expected in the United States.

World rice stocks have been increasing strongly since 2008, boosted by positive production outcomes and the need by a few governments to maintain increased rice reserves for their public distribution systems. Rice stocks peak early in the projection period at just under 157 Mt in 2013, then drift moderately lower through the remainder of the projection, reaching 145 Mt in 2021, mainly driven by a contraction in China and India from the extraordinarily high inventory levels held in recent years. The major exporters' stock-to-use and stock-to-disappearance ratios continue to decrease all through the projection period.

Figure 4.5. **World rice production and stock ratios**

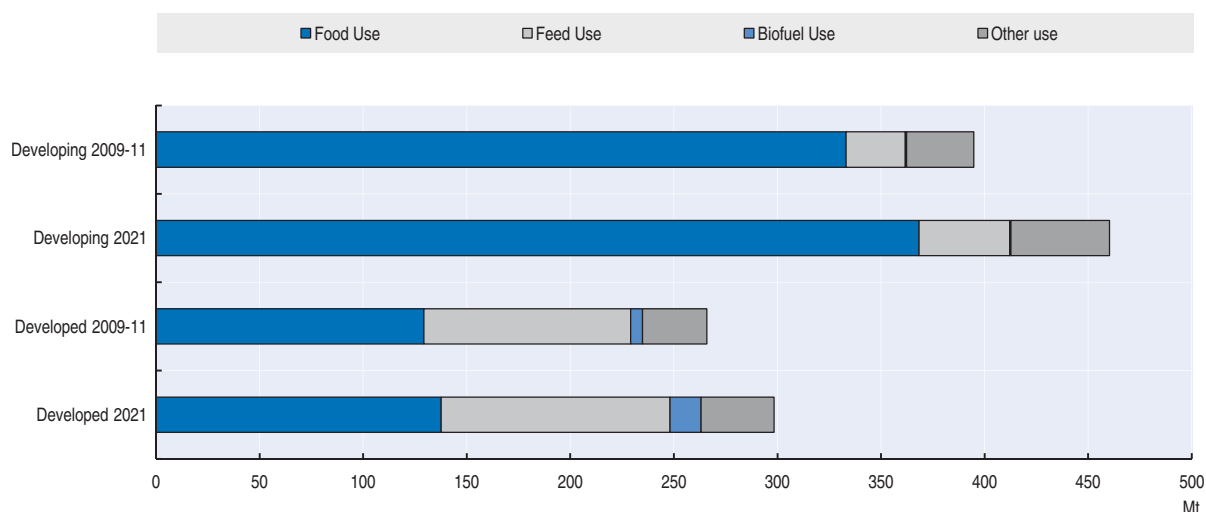


Source: OECD and FAO Secretariats.

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Use of cereals

Total wheat utilisation is projected to reach nearly 755 Mt by 2021. Wheat is expected to remain a commodity that is predominantly consumed for food, roughly 67% of total use by 2021, 2% below its current share (Figure 4.6). *Per capita* food consumption is projected to

Figure 4.6. **Wheat consumption in developed and developing countries**

Note: In "other use", we include other non-disaggregated industrial demand sources (e.g. processing of starch or straw).

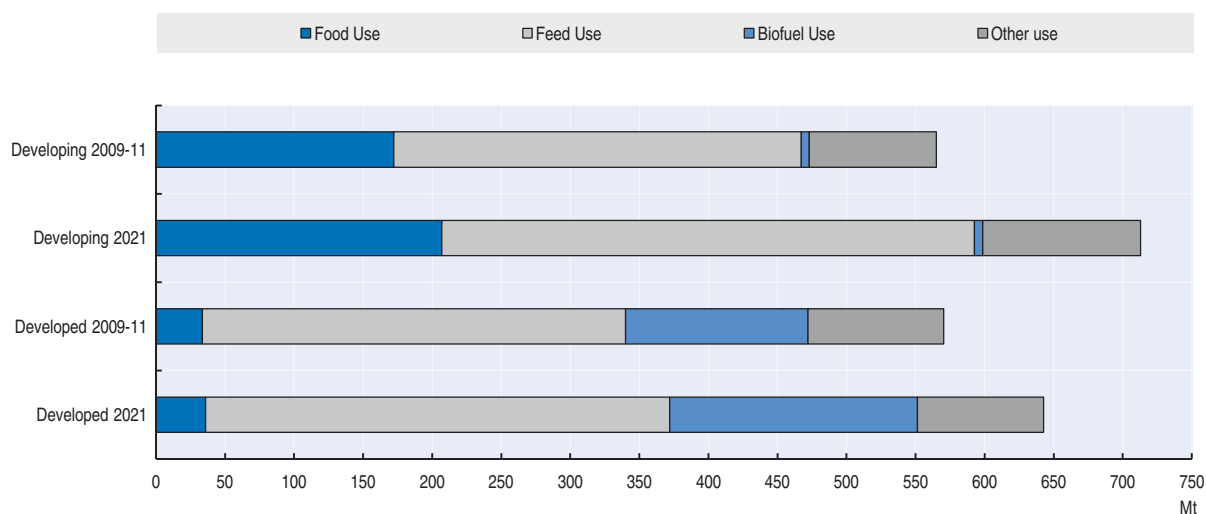
Source: OECD and FAO Secretariats.

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remain steady at around 65 kg per person p.a. World wheat feed utilisation is expected to reach 154 Mt by 2021, growing at a slightly slower pace than during the historical period, though still representing around 20% of total use (37% in developed countries and 10% in developing countries). Wheat use for biofuels in developed countries increases from 0.09% in the base period to 2.1% of world wheat utilisation by 2021. The projected increase of 7% p.a. will be driven largely by growth in EU wheat-based ethanol production which, by 2021, may account for almost 83% of global wheat use for biofuel production (compared to 68% in the base period).

World utilisation of coarse grains is projected to increase by 19% by 2021, compared to the base period and reach 1 350 Mt, driven largely by expansions in demand for feed and biofuel. The projected annual growth (1.5%) is less than observed over the previous decade (2.7%) (Figure 4.7). Food use is projected to reach 239 Mt, up 18% from the base period and resulting in a small increase in *per capita* level to around 31 kg. Total coarse grains feed use is projected at 722 Mt, up 20% from the base period, mostly driven by strong growth in the Russian Federation (58%), China (47%), and the United States (24%). Among its industrial usages, maize-based ethanol production in the United States is projected to continue expanding until 2015, following the ethanol mandate, and then decreasing slightly until the end of the projection period. This demand path is dependent on the assumptions on policy implementation discussed in Chapter 3 on biofuels and remains a source of uncertainty. World use of coarse grains for production of biofuels is projected to reach 185 Mt, 34% more than in the base period and representing 13.6% of total world coarse grains production (within the United States, the share of maize used for ethanol production goes up to 38.6% of total maize domestic production).

World rice utilisation, consumed chiefly as food (85%), is set to reach 542 Mt in 2021, up from 460 Mt in the base period. The increase is driven mainly by population growth, while *per capita* food consumption is also anticipated to rise slightly from 56.7 kg in 2009-11 to 59.9 kg in 2021. The annual growth rate in aggregate consumption over the projection period is 1.2%, down from 1.7% in the past ten years.

Figure 4.7. **Coarse grains consumption in developed and developing countries**

Note: In "other use", we include other non-disaggregated industrial demand sources (e.g. production of high fructose corn syrup).

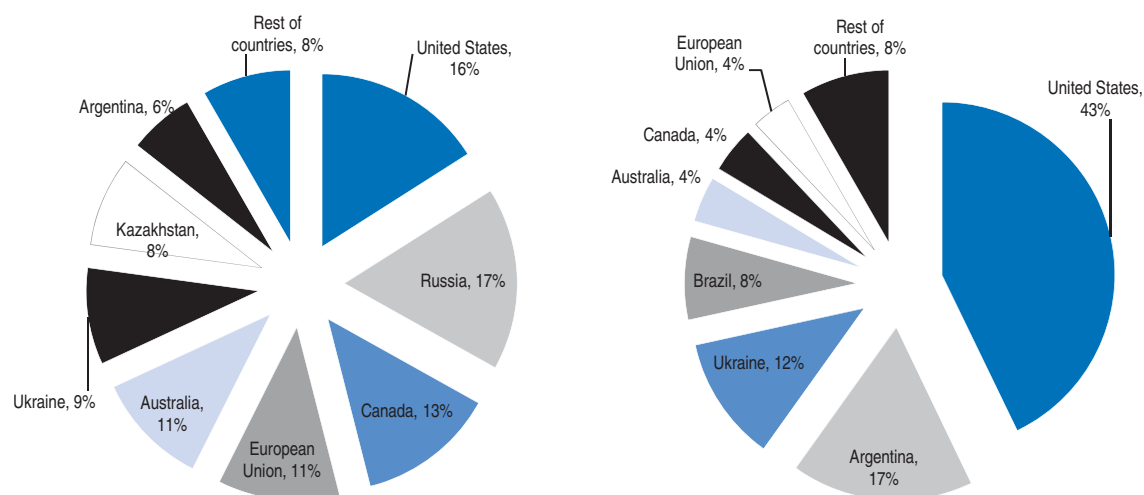
Source: OECD and FAO Secretariats.

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Trends of rice consumption vary across regions. In Southeast Asia, where rice is a major food staple, consumption is projected to expand by 1.1% to 2.5% p.a, often spurred by vigorous population and income growth. Rice consumption in Africa is anticipated to show a significant overall increase of 52% by 2021 from the base period, equivalent to 3.7% growth p.a, due to relatively strong population growth and continued changes in diet towards rice. The reverse is foreseen in China, where total and *per capita* consumption are projected to decline. Consumption by developed countries looks set to rise to 20 Mt of rice by 2021, or 0.5% per year. With only a 4% share of total consumption, the contribution of developed countries to global consumption growth will continue to be small.

Trade of cereals

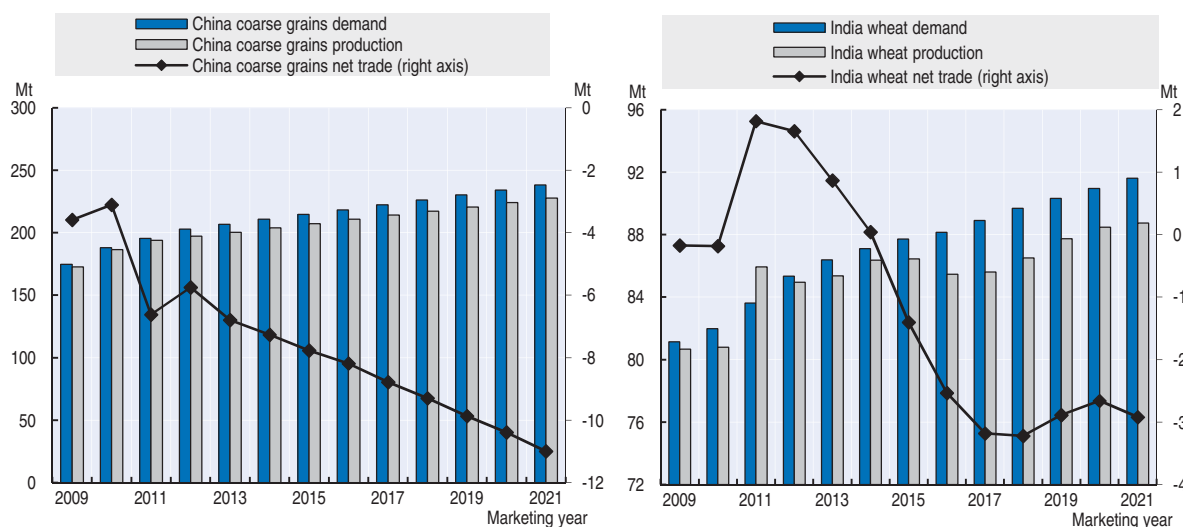
World trade of wheat and coarse grains in 2021 is projected to expand to 298 Mt, 42 Mt (19%) higher than in the base period. This sharp expansion in global cereal trade is mostly on account of a surge in wheat exports, which is anticipated to approach 152 Mt, 17% higher than in the base period. This is boosted by the recovery of exportable supplies of grains in the CIS and the stronger import demand for feed wheat as a result of tight domestic supplies of coarse grains. The largest increases in wheat imports are expected in China, the European Union, Indonesia, and the Islamic Republic of Iran. World trade in coarse grains is projected to reach 146 Mt, 20% higher than the base period. Whereas the Russian Federation is projected to achieve the highest export share of wheat in 2021 (17%), the United States keeps its leading position in coarse grains markets (43%) (Figure 4.8). Kazakhstan increases its share in world wheat trade but does not fully exploit its potential, primarily for reasons relating to institutional and infrastructure constraints (Box 4.2). Traditionally high production variability in CIS countries due to changing weather conditions may have implications for global trade and world price volatility.

Figure 4.8. **Wheat (left) and coarse grains (right) export shares in 2021**

Source: OECD and FAO Secretariats.

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A sharp rise in imports by China as well as higher imports by Japan, Mexico and Saudi Arabia are expected to be offset by reductions in imports by the European Union and Korea. China and India together account for 20 Mt of grains⁵ imports in 2021 (Figure 4.9), experiencing an increasing gap between supply and demand over the projection period.

Figure 4.9. **Production, demand and net trade projections for coarse grains in China (left) and wheat in India (right)**

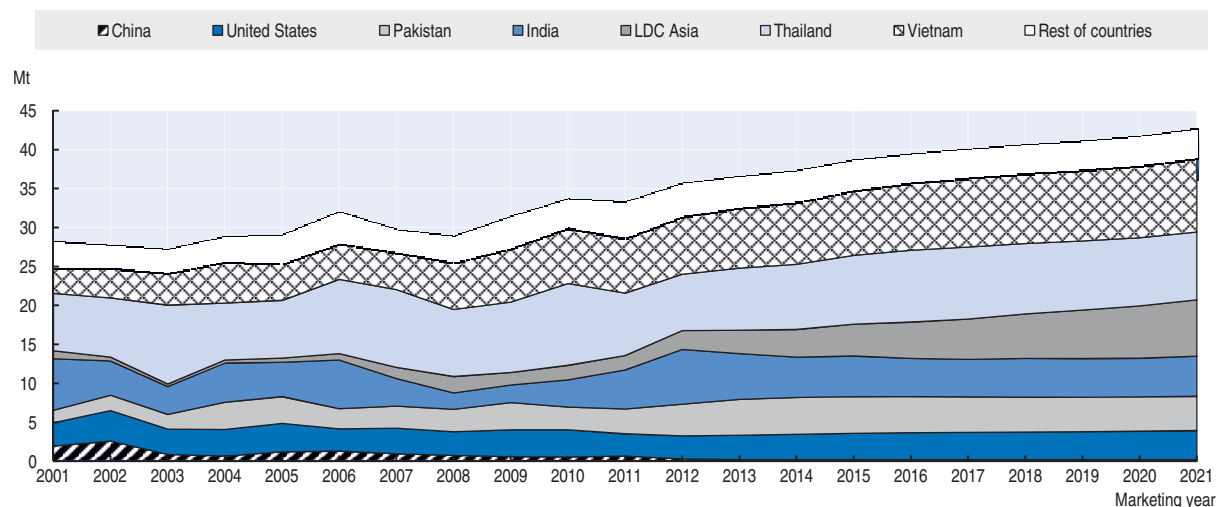
Source: OECD and FAO Secretariats.

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Rice trade is projected to increase by 1.9% p.a, going from 33 Mt to 43 Mt between 2011 and 2021 (Figure 4.10). Global rice trade is likely to be fuelled by growing imports by African countries, where the production gains are unlikely to be sufficient to satisfy the growing demand. Among large importing countries, the Philippines is expected to reduce purchases by 21% by 2021, assuming it maintains its policies favouring domestic production. Viet Nam is projected to be the largest rice exporter by 2021, displacing Thailand's higher quality and higher priced rice. India's exports are projected at 5 Mt over the projection period. Other Asian countries, in particular Myanmar and Cambodia, are expected to make major inroads in the international rice market, with exports growing by 12% p.a. over 2012-21.

Exports by the United States are expected to grow steadily at 2.5% p.a. With production stagnating, imports by the European Union are projected to expand, facilitated by preferential access granted to least developed countries under the Everything But Arms (EBA) programme. Little change is foreseen in imports by Japan and Korea, which will largely reflect the WTO minimum quota provisions.

Figure 4.10. **World rice exports projections**



Source: OECD and FAO Secretariats.

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Main issues and uncertainties

World cereal stocks increase in the early years of the projection period under the assumption of normal weather conditions and average yields, but overall world inventories are projected to remain low in relation to the past. The low level of stocks increases price volatility in world markets, in the event of sudden or unexpected production shortfalls in major producing countries.

Another source of uncertainty is the level of production at any given year. In view of the fact that most crop prices are projected to remain strong, competition for land is likely to intensify with planting decisions shaped by the inherent inter-seasonal price volatility (e.g. maize and soya in the United States), which in turn will contribute to unexpected changes in production levels.

The evolution of crude oil prices, affecting the economic incentives to use biofuels, is an important assumption in the baseline again this year. Oil prices are assumed to increase steadily, rising above USD 140 per barrel by the end of the projection period. This increase in oil prices provides upward support for both maize and sugar prices, which may move more closely together than they have historically.

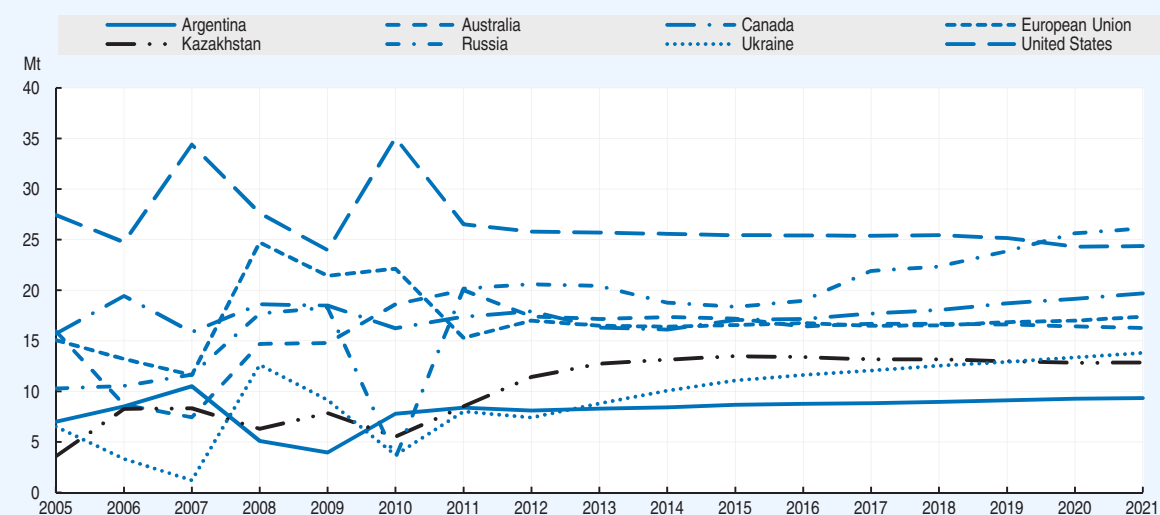
Policies remain as an important source of uncertainty. Any significant changes in biofuel policies in the United States, the European Union, and Brazil could have significant impact on the global cereal market, in particular on maize. Moreover, trade policy behaviour in exporting countries adds uncertainty to cereal markets in periods of natural yield fluctuations, as experienced recently in wheat and rice. Policy interventions in the rice economy are frequent and play a critical role in influencing international rice trade and prices (Box 4.2). Although several LDC Asian countries are projected to increase their shares in world exports, this is unlikely to translate in a lessening of government interference, which means that changes in policies could significantly alter the rice projections presented in this chapter.

Box 4.1. Competitiveness of the wheat sector of Kazakhstan and constraints for future productivity growth

Kazakhstan has a large land area, with comparatively dry conditions and inherent soil fertility for wheat production. Since the Soviet era ended in 1991, the economy of Kazakhstan has undergone rapid structural change and agriculture is experiencing strong inter-sectoral competition. Currently, Kazakhstan is the dominant wheat producer in Central Asia and ranks third, behind the Russian Federation and Ukraine, in wheat production amongst CIS countries. Roughly one-quarter of arable land under cash crops in the Kazakhstani wheat belt belongs to agro-holdings, i.e. large-scale operators holding more than 100 000 ha each. Moreover, Kazakhstan is the most important high protein wheat producer in Central Asia.

Figure 4.11. Wheat export projections from major exporters

Historical data: 2005-11, baseline projections: 2012-21



Source: OECD and FAO Secretariats.

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Box 4.1. Competitiveness of the wheat sector of Kazakhstan and constraints for future productivity growth (cont.)

As shown in Figure 4.11, wheat exports are expected to increase in the short term due to higher expected yields and area expansion, due mainly to conversion of marginal lands, driven by good market returns. However, this trend is not expected to continue after 2015 due to different limiting factors, and its export volume will be surpassed by Ukraine at the end of the projection period. Productivity growth in Kazakhstan is currently hampered by several constraints. First, the lower intensity of agriculture is probably driven largely by the dry climate and risks of drought. At the beginning of the 2000s, the Kazakhstan government adopted a legislative framework that was favourable to the leasing of agricultural machinery and provided privileged access to farmers. This allowed wheat growers to massively renovate their machinery fleet, implement new growing techniques, and consequently significantly improve yields and productivity. Nevertheless, only the biggest growers can actually afford foreign consultants and agronomists to fully utilise new technologies. For medium and small farms, access to knowledge and information remains limited to the recommendations provided by input suppliers and national extension system, which is at the initial development stage. Second, Kazakhstan exporters are constrained by high transportation costs and disadvantages in accessing Black Sea port facilities – the key point for wheat delivery to North Africa and Europe. The Central Asian market is already saturated by Kazakhstan wheat and flour, with future gains limited to the population growth in the region. Exports to the East (South-East Asia, Korea and Japan) look promising, but transportation costs and infrastructure limitations do not allow traders to effectively compete with other world wheat suppliers. In addition, access to finance and proper financial management is still an issue for the small- and medium-sized farms. The lack of turnover capital does not allow them to increase input use and store wheat while waiting for better prices.

In short, there is considerable scope to improve the on-farm productivity of wheat in Kazakhstan. The potential methods for improvement can be categorised as: varietal improvement and related seed management, agronomic and crop management improvements; and institutional and infrastructure improvements.

Box 4.2. The Impact of Thailand's new rice support policy

Thailand is the leading world rice exporter and Thai white Rice, 100% B is a standardised grade and quality which acts as a good reference on which to base or discount prices of other types and grades of rice in international trade. The Thai white Rice, 100% B is also the representative international rice quotation used to equilibrate the rice module of the OECD-FAO medium-term projection model.

Thai prices are influenced by government policies. In 2011, the new government, abiding by its election campaign promise, reintroduced the rice pledging programme (also referred to as the “rice mortgage scheme”) that had been replaced by the Price Insurance Scheme in 2010/11. The programme entitles farmers to pledge unlimited quantities of paddy rice as collateral for loans, which they can subsequently either redeem by repaying the loans, or forfeit to the government. In 2011/12, the programme offered prices to paddy producers that were substantially above those guaranteed by the precedent price insurance scheme, with the increases varying between 25-60%. The markups were even more pronounced when compared with prevailing market prices.

Box 4.2. The Impact of Thailand's new rice support policy (cont.)

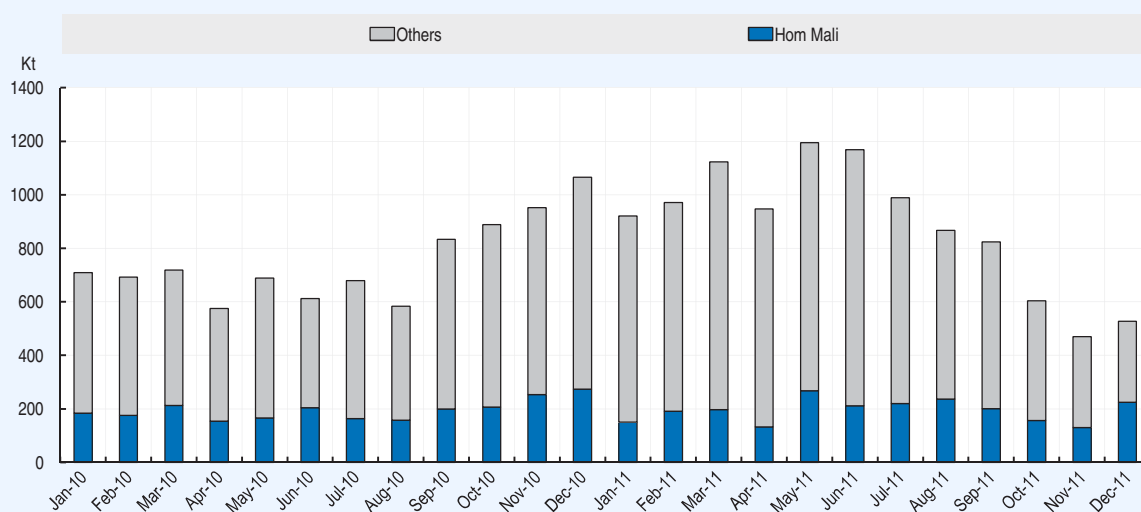
Table 4.1. Thailand: Support prices under Paddy Pledging Programme and Price Insurance Scheme

	Paddy Pledging Programme (2011/12)		Price Insurance Scheme (2010/11)	
	Baht/tonne	USD/tonne	Baht/tonne	USD/tonne
White rice	13 800-15 000	446-484	11 000	355
Glutinous	15 000-16 000	484.517	10 000	323
Pathum Thani	16 000	517	11 500	371
Provincial fragrant	18 000	581	14 300	462
Hom Mali	20 000	646	15 300	494

Source: Thai Department of Internal Trade, Ministry of Commerce/USDA.

StatLink  <http://dx.doi.org/10.1787/888932640559>

Figure 4.12. Thailand: Rice exports in 2010 and 2011



Source: Board of Trade of Thailand.

StatLink  <http://dx.doi.org/10.1787/888932639723>

The announcement of the new support price levels had the effect of supporting Thai export prices in July 2011, even before the implementation of the pledging programme in October. As of September 2011, the Thai white Rice, 100% B was quoted at USD 618 per tonne, up from USD 500 per tonne in May. The measure also had the effect of driving up rice prices from other origins.

The renewed vigour of the rice market began to falter in September when the Indian government suspended the restrictions it had imposed on regular (as opposed to basmati) rice exports since 2008, following the surge in world prices. Deliveries of rice by India surged, taking much of Thailand's market share. Amid growing competition, several other major exporters, in particular Pakistan and Viet Nam, also adjusted down their price quotations closer to the levels offered by Indian traders. This move also eventually depressed the Thai benchmark price, which had retreated 18% by February 2012, compared with its September level. Rice shipments from Thailand fell heavily in the second part of 2011 and beginning of 2012.

Notes

1. Average years, 2009-11.
2. It is important to note that this is an annual average price, and therefore does not reflect intra-annual price variations.
3. The eight major wheat exporters are considered; namely the United States, Argentina, the European Union, Canada, Australia, the Russian Federation, Ukraine and Kazakhstan. In the case of coarse grains, the countries included are the United States, Argentina, the European Union, Canada, Australia, the Russian Federation, Ukraine and Brazil, and for rice Viet Nam, Thailand, India, Pakistan and the United States.
4. All the quantities for rice are on a milled rice basis.
5. This consists of wheat and coarse grains, but does not include rice.

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