COTTON

Market situation

The world cotton market in 2014 was affected by policy changes in China, which reduced the amount of support offered to farmers. This policy change lowered the gap between domestic and international cotton prices introduced in 2011. Falling domestic prices increased mill consumption after several seasons of decline, and a reduction in import quotas sharply reduced China's demand for cotton from the rest of the world.

Global cotton production has decreased and consumption increased over the last few years, but the international market has yet to equilibrate. Global production at 25.8 Mt in 2014 exceeds consumption and global cotton stock rose for the fifth consecutive year as the stocks-to-use ratio climbed to 86%. The United States and Pakistan increased production in 2014, but falling international prices in the beginning of 2014 resulted in lower production in southern hemisphere countries such as Brazil and Australia. Global mill consumption continued to rebound in 2014. Except for Brazil, major cotton mill users, namely China, India, Pakistan, Turkey, Bangladesh, the United States and Indonesia increased consumption.

Global cotton imports declined for the second consecutive season to 7.6 Mt, with China, Indonesia and Turkey reducing imports. Policy changes in China and lower import demand elsewhere caused cotton exports to decline. India's exports also declined sharply, but as harvested area expanded, India moved past China as the world's largest cotton producer in 2014.

Projection highlights

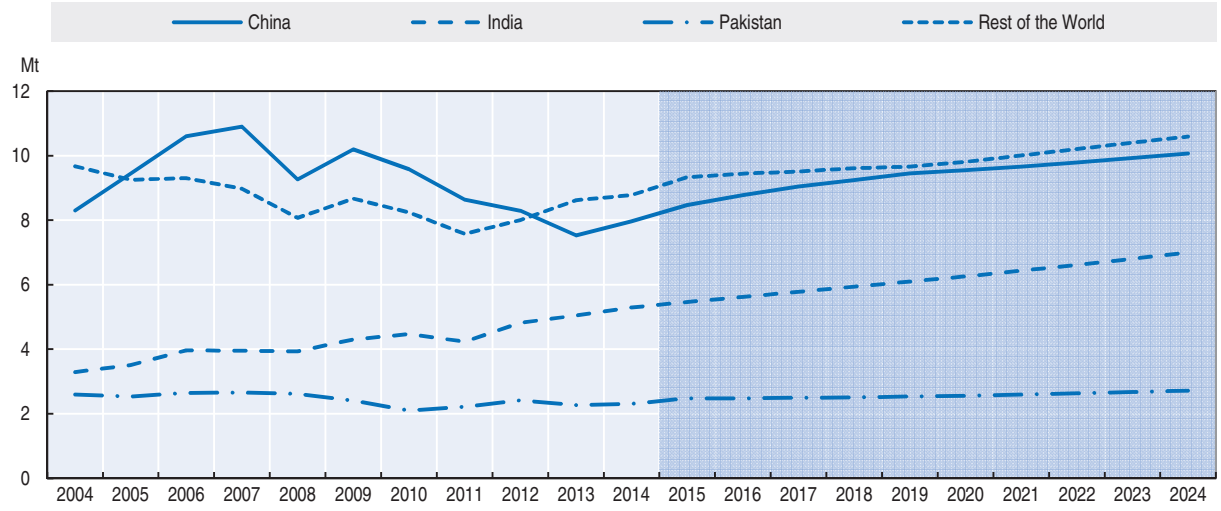
Relatively stable cotton prices are expected during 2015-24 as the volatility surrounding the 2010 spike in cotton prices subsides. The shift from building stocks to reducing them in China is one of the major factors behind a drop foreseen in world cotton prices during the early years of the outlook period. By 2024, world cotton prices are expected to be lower than in 2012-14 in both real and nominal terms. The world price in 2024 in real terms is expected to be 23% lower than in the base period (2012-14), and 9% lower than its 2000-09 average.

World production is expected to grow more slowly than consumption during the first years of the outlook period, reflecting the anticipated lower prices with the large global stocks that accumulated between 2010 and 2015 influencing the market. The stock-to-use ratio becomes 46% in 2024. World cotton area grows throughout the projection period, but does not surpass the peaks seen in 2004 and 2011. Yields rise around the world, but global average yield grows slowly as production switches from relatively high yielding countries, like China, to relatively low-yielding ones in South Asia and Sub-Saharan Africa.

World cotton use is expected to grow at 1.8% p.a., a rate slightly above the long term average of 1.7% during the last 20 years. In 2006 and 2007, world consumption reached a peak of 26.5 Mt, and following significant declines during 2008-11 – and with a relatively slow recovery – this peak is not likely to be surpassed again until 2017. World per capita consumption of cotton increases, but the level in 2024 is nonetheless expected to remain below historical peaks. China is expected to remain the largest consumer of cotton fibre, but its consumption growth is expected to become lower than India's and other growing consumers

such as Bangladesh and Viet Nam. Consequently, China's share of world consumption is expected to stagnate (Figure 3.8). While reforms of China's cotton support policy will help sustain its share of world textile mill use of cotton, wage gains and demographic shifts are significant factors limiting that share. India's consumption is expected to rise by 39% over the medium term, to make it the leading beneficiary of growing world consumption.

Figure 3.8. **Cotton consumption by major country**



Source: OECD/FAO (2015), "OECD-FAO Agricultural Outlook", *OECD Agriculture Statistics* (database), *http://dx.doi.org/10.1787/agr-outl-data-en*.

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World trade rises at a rate above its long-term average in the *Outlook*, with exports in 2024 19% above those in the base period. The United States retains its position as the world's largest exporter accounting for 24% of world trade. India retains its position as the world's second largest source of cotton while increasing its global share from 18% in the base period to 20% by 2024. Brazil and least developed countries (LDCs) in Sub-Saharan Africa are also expected to increase their export shares. China retains its position as the world's largest import market for cotton throughout the outlook period. Reflecting the rebound of its consumption, China's share of world trade is foreseen to increase to 39% in 2024. Bangladesh's share rises more than any other importer, up from 10% to 13%. Imports are also expected to increase in Viet Nam and Indonesia increasing their share of the international cotton market.

Important sources of uncertainty in the current *Outlook* are the level of consumer demand and its relationship to industrial demand for cotton fibre, the largest among natural fibres of vegetable or animal origin. Due to significant value-added in the production of consumer products, and substantial opportunities to substitute synthetic fibres for cotton, the relationship between consumer spending on clothing and the volume of cotton consumed can vary significantly. China's cotton policies and prospects for productivity gains around the world are another source of uncertainty.

The expanded cotton chapter is available at
http://dx.doi.org/10.1787/agr_outlook-2015-14-en

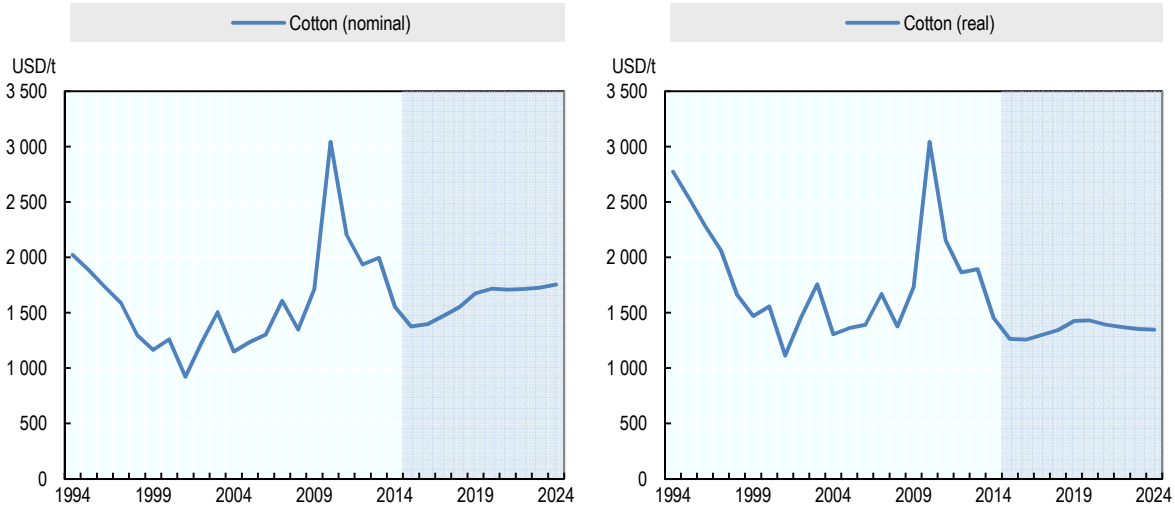
Price

The benchmark A Index measure of cotton[12] prices delivered to Asian ports is expected to average much below its 2013 level (USD 1 557/t) during 2014 (Figure 3.8.2). World cotton markets in 2014 continued to be indirectly influenced by the 2010 price spike, as the stock-building efforts begun by the People's Republic of China (hereafter "China") in the wake of the price spike continued supporting prices. After rising 78% in 2010, the A Index fell 28% in 2011 and is estimated down an additional 29% from that point in 2014. Relatively stable prices are expected over the outlook period, generally falling through 2015, but rising afterwards. While rising, prices remain below the base year average of USD 1 830/t in every year of the projection period.

China's efforts to ensure its producers receive about USD 3 200/t resulted in a significant accumulation of stocks starting in 2011. In addition to acquiring a significant share of the domestic crop, the reserve authorities also imported cotton. The withdrawal of millions of tonnes of cotton from world markets has supported world prices, particularly after December 2012, as the world economy strengthened. China has signalled its intention to reform its cotton support programme, and to move to reduce its stocks. China's shift from building stocks to reducing them is one of the major factors behind a decline foreseen in world cotton prices during the early years of the outlook period.

Nominal cotton prices in 2015-24 are expected to be higher than in previous decade. They are expected to average USD 1 610/t, 21% more than the average in 2000-09. However, the price rise is smaller than for wheat and corn, for which prices are forecast to average 33% and 41% higher than in 2000-09. Cotton prices shifted downward relative to a variety of other commodities during 2000-09, including crops that compete with cotton for planted area, like wheat, corn, and soybeans. Cotton prices are not expected to recover enough in the projection period to return to their earlier relative price levels.

Figure 3.8.2. Evolution of world cotton prices



Source: OECD/FAO (2015), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database), http://dx.doi.org/10.1787/agr-outl-data-en.

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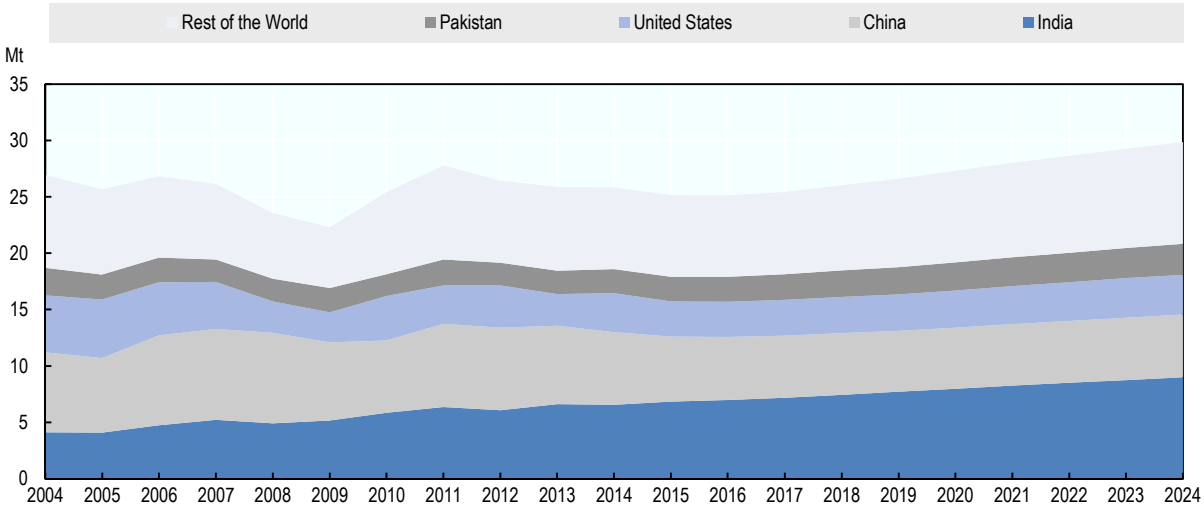
Production

World cotton production is projected to grow 2.1% annually in the next ten years, reaching 29.9 Mt in 2024. This total is expected to be 15% higher than production in the base period. Following the 2008 global financial crisis and subsequent cotton price volatility, world cotton production starting from a relatively low level in 2015, rises as world consumption rebounds. Cotton yields are expected to rise in most countries, but the simple global average yield is expected to rise only 1.1% p.a. over the projection period as global production becomes increasingly concentrated in countries with relatively low yields.

Output is expected to fall in China, the world's largest producer since 1982 (Figure 3.8.3). While achieving high per hectare yields (about twice the world average), China's cotton producers – particularly in its eastern provinces – utilise relatively labour-intensive technology. With a high share of labour in production costs, China's steadily rising wages have constrained profits for cotton growers, while rising subsidies for grain production have further eroded the relative attractiveness of producing cotton. Fragmented land holdings limit the ability of cotton growers in the eastern provinces to adopt mechanised production, while demographic trends indicate continued declines in rural population and rising wages are likely in the future. Mechanisation has been more widespread among the larger producing units in China's Xinjiang province, where per hectare yields are the highest of any province. China has indicated that 2014 will begin a period of reform for its cotton policy, beginning with a reduction of support to farmers in the eastern provinces.[3]

Figure 3.8.3. Cotton production by major producer



Source: OECD/FAO (2015), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database), http://dx.doi.org/10.1787/agr-outl-data-en.

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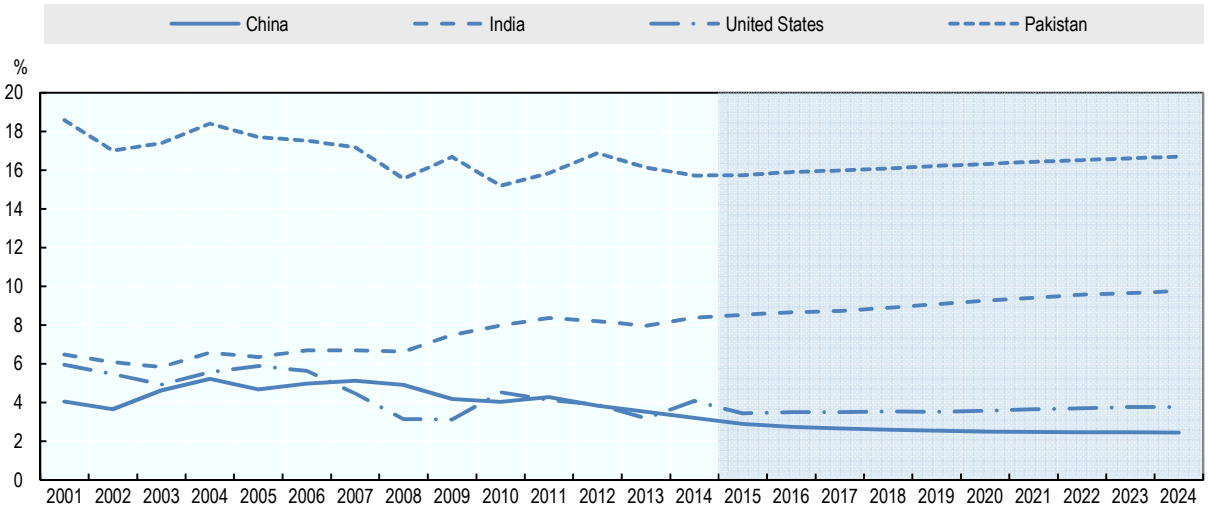
India is expected to replace China as the world's largest cotton producer, and is expected to account for 30% of world output in 2024. As Indian farmers continue to apply new and existing technologies to capture currently unrealised yield potential, rising relative cotton prices on world markets will add additional incentives to increase planted area and output. While there is a debate around the use of genetically modified (GM) crops, the adoption of GM cotton in India has been part of a shift in practices and technology that led India's cotton production to more than double between 2000 and the base period. While GM adoption is nearly complete, yields are expected to continue to grow, albeit at far below the 8.2% annual rate

realised during 2000-09. With cotton area in India also rising faster than harvested area of other crops, India accounts for the largest share of the expected gain in world production through 2024 (Figure 3.8.4).

Pakistan accounts for the second largest share of increased global production, and like India is expected to realise faster growth in cotton area than in other crops. However, growth over 2015-24 begins at a relatively lower base than in India, as Pakistan has lagged considerably behind India in the adoption of GM cotton. Cotton accounts for a larger share of Pakistan's planted area than India's, but this share fell during 2000-2009. Other major producers which will grow relatively fast are West African countries and Brazil with annual growths rates of 2.3% and 4.6% respectively during 2015-24.

Historically, cotton area harvested is 3-4% of the area harvested of all grains, oilseeds, sugar crops, roots and tubers. Globally, total area harvested for all these crops is expected to grow slowly during 2015-24 (0.38% p.a.), well below cotton area's expansion of 1.0% p.a. However, cotton's share of total harvested area reaches to mere 3.2% in 2024. The volatility of cotton prices in recent years and China's efforts to reduce its stocks mean that the early years of the projection are expected to be an unusually low point for cotton area, magnifying the growth rate expected during the outlook period. During the last half of the 1990s, cotton accounted for 3.5% of this global area, but with substantial increases in productivity, a smaller share of crop area is now used to sustain growing cotton production.

Figure 3.8.4. Cotton's share of total harvested area



Source: OECD/FAO (2015), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database), http://dx.doi.org/10.1787/agr-outl-data-en.

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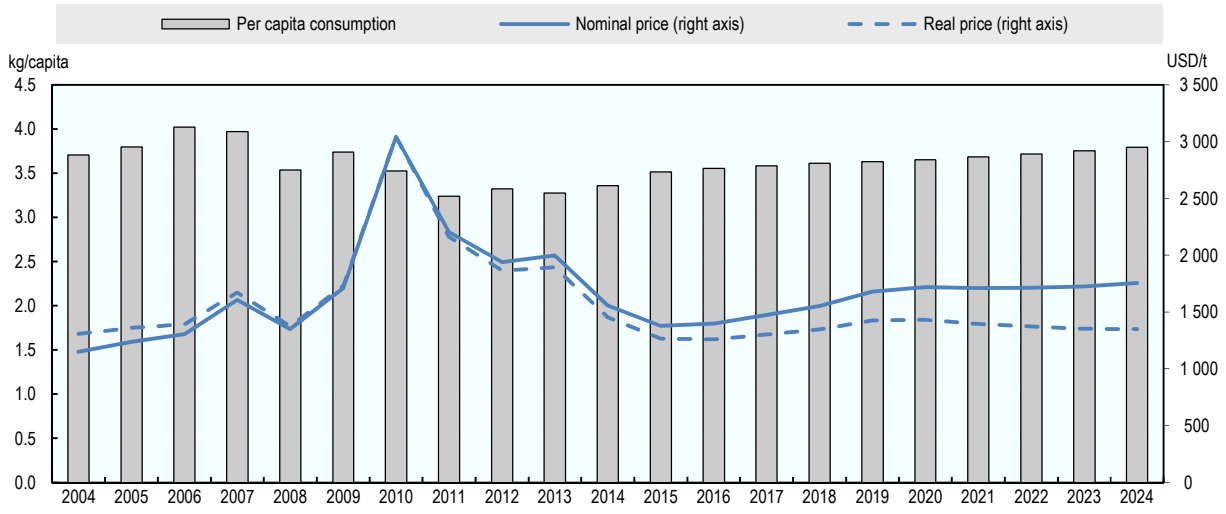
Consumption

Total demand for cotton is expected to reach 30.4 Mt in 2024, surpassing its previous record-high by 3.9 Mt, with a growth rate of 1.8% p.a. over ten years. While cotton consumption is expected to grow slightly more rapidly than the 1.7% p.a. rate during 1995-2014, it is expected to grow significantly more slowly than the 3% p.a. rate realised during 2000-09. While consumption grows faster than population in the next ten years, consumption on a per capita basis in 2024 is nonetheless expected to remain below the peak during 2005-07 (Figure 3.8.5).

Figure 3.8.5. World per capita consumption of cotton and world prices



Source: OECD/FAO (2015), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database), http://dx.doi.org/10.1787/agr-outl-data-en.

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Slower consumption growth in the projections compared to the last decade is due to the volatility of the cotton market and competition with synthetic fibres. In recent years, cotton consumption has been disrupted by global economic volatility, an unprecedented price shock, and policy changes in China. From a peak of 26.5 Mt in 2006 and 2007, world cotton consumption fell 14% to 22.7 Mt in 2011. The share of cotton in global textile fibre consumption has been declining for decades[4], and particularly so during this period, where textile manufactures increasingly substituted synthetic fibres for cotton to produce textile garments traditionally made with cotton. Moreover, growth of global textile fibre consumption is driven by developing countries, where the share of synthetic fibre is rising due in part to the growing role of industrial applications in fibre consumption in these economies.

China is expected to remain the largest consumer of cotton fibre, its position since the 1960s. But China's growth rate is expected to become lower than India's and other growing consumers such as Bangladesh and Viet Nam, and its share of world consumption is expected to stagnate, continuing a shift underway since 2007 (Figure 3.8.1). The age structure of China's population points to a decline in new labour-force entrants in coming years. With wages already rising steadily, China's comparative advantage is shifting away from labour-intensive industries like clothing. Minimum wage policies, pollution control, and reduced investment will likely support this trend. Compounding this, the price of cotton in China has risen substantially relative to the world price since 2010 due to support policies for cotton farmers. While the reform of China's cotton programme is expected to boost China's share and level of cotton consumption early in the outlook period, it is insufficient to sustain it and China's share of world cotton consumption in 2024 is projected to fall to 33%, from the peak at 41% in 2007.

India's textile industry has been the largest beneficiary of China's shift away from processing cotton fibre into textiles during 2012-14. India recently became the world's largest exporter of cotton yarn, and by 2024 will be closing in on China to have the world's largest domestic market in population terms. China's reforms starting in 2014 are expected to moderate India's increased consumption between the base period and the first few years of the outlook period. India's cotton consumption, expected to total 7.0 Mt in 2024, continues its trend of a growing market share, which rises from 21% to 23% of world total.

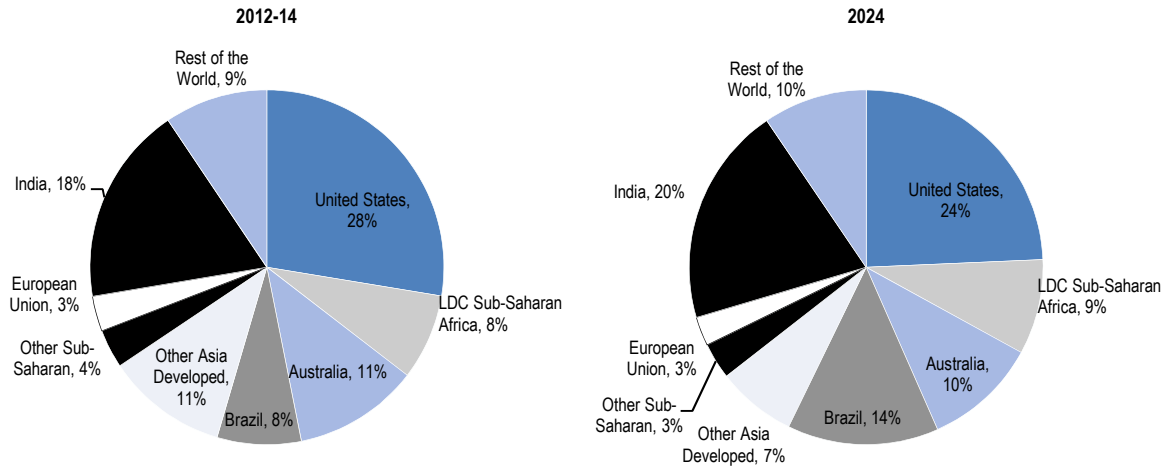
The fastest growth among major consumers is expected in Bangladesh and Viet Nam. Consumption is expected to grow at 3.8% and 3.0% respectively, as their textile industries continue the rapid expansion each has enjoyed since 2000. While Bangladesh had been widely expected to see a reduction in its textile exports after the phase-out of the Multifibre Arrangement (MFA) in 2005, its garment exports and cotton spinning have instead flourished. Cotton consumption in Bangladesh grew at a 3.5% rate during 2005-14, and at a 17% rate in Viet Nam.

Trade

Cotton trade is expected to grow relatively strongly during the outlook period. Trade will be boosted by China's return to world markets in the latter part of the projection period and by the continued expansion of textile output in countries which are large net cotton importers. Traditionally, cotton has been a relatively highly trade-dependent crop, with a ratio of world trade to world consumption of 30-45%, compared with ratios below 20% for grains and below 30% for soybeans. Trade is expected to grow faster than world consumption, reaching 10.5 Mt and 35% of consumption by 2024.

The leading exporter throughout the outlook period will be the United States, while India is expected to remain the world's second largest exporter (Figure 3.8.6). In the decade before its recent surge in productivity and production, India was a minor player on world markets. India frequently imposed export quotas to maintain low cotton prices for its textile industry, and it was a net importer for seven consecutive years between 1998 and 2004. But more recently, India has at times accounted for as much as 22% of the world's cotton exports. By 2024, its share is forecast to be larger than in the base period, but only by a small margin as consumption gains begin to approach output growth.

Figure 3.8.6. World cotton export shares



Source: OECD/FAO (2015), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database), http://dx.doi.org/10.1787/agr-outl-data-en.

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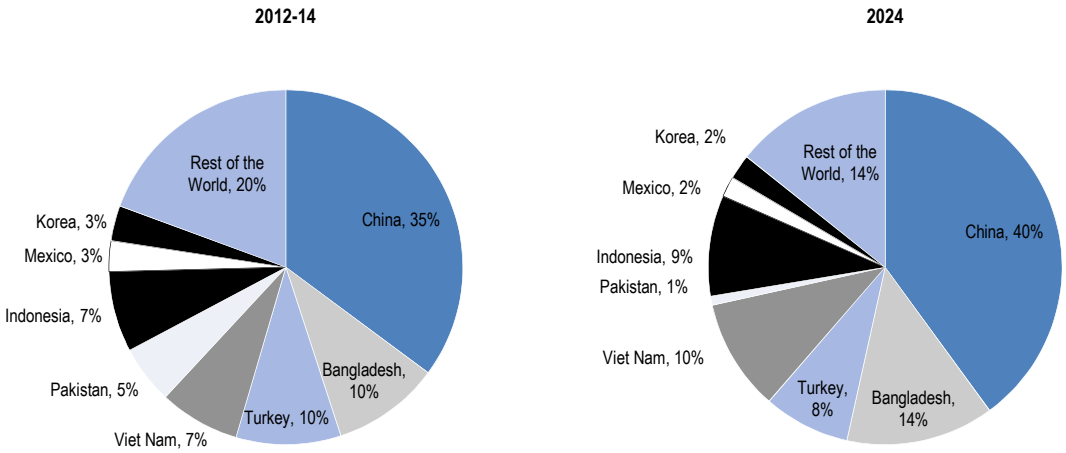
Least Developed (LDC) Sub-Saharan Africa is expected to see a recovery of its cotton exports increasing their share of world trade growing from 8% to 9% by 2024. However, the region's share of world trade has been relatively variable in the last few decades, typically ranging between 4% and 10%. Cotton consumption is limited

throughout Sub-Saharan Africa, and many countries export virtually all of their production. From a high of 916 kt in 2004, LDC Sub-Saharan Africa's production fell below 400 kt by 2009 as relative cotton prices reached new lows. With the recovery of world cotton prices, and expected yield gains in the region, production, exports and share of world trade are expected to rise through 2024.

Like exports, shifts in the composition of importers represent the continuation of recent trends in the world cotton economy. China is expected to retain the role as world largest importer that it has held since shortly after its World Trade Organization (WTO) accession in 2002 drove its consumption up sharply. China's share of the world cotton imports is expected to increase from 34% in the base period to 40% in 2024 (Figure 3.8.7). Bangladesh's 2024 share of world trade is expected to be 34% larger than in the base period, and gains are also expected for Viet Nam and Indonesia. As China's role in world textile production diminishes, cotton consumption is expected to grow more rapidly in a variety of countries, most of which are significant net importers.

Figure 3.8.7. World cotton import shares



Source: OECD/FAO (2015), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database), http://dx.doi.org/10.1787/agr-outl-data-en.

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Main issues and uncertainties

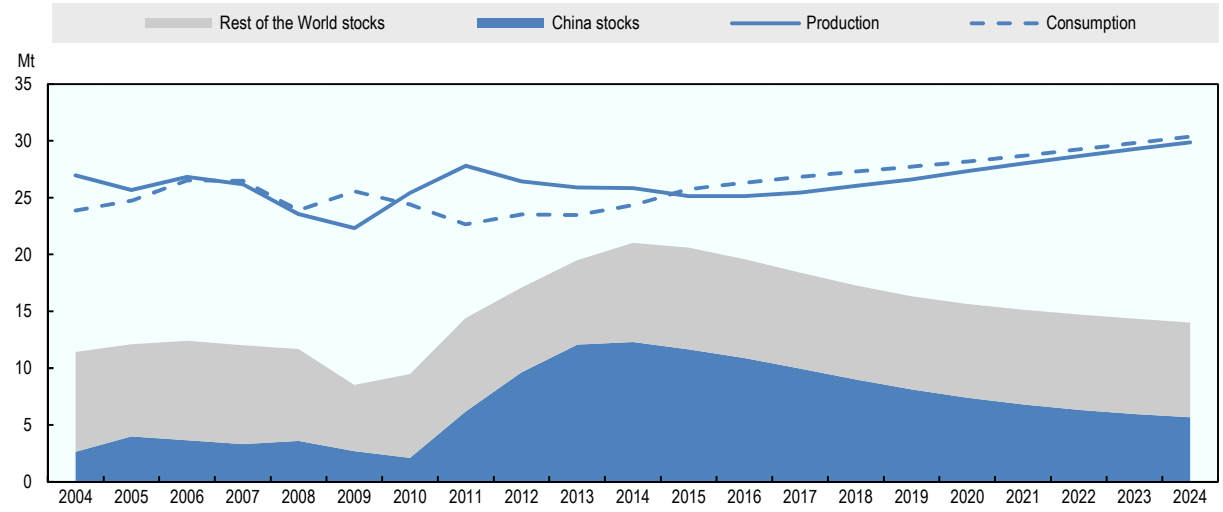
Consumer demand and its relationship to industrial demand for cotton fibre is an important source of uncertainty. Cotton consumption is ultimately a derived demand: textile mills consume cotton to produce yarn used in clothing and other consumer goods. Due to textile trade, the geographic distribution of the consumption of these consumer products can differ significantly from the distribution of cotton fibre consumption. Due to significant value-added in the production of consumer products, and substantial opportunities to substitute synthetic fibres for cotton, the relationship between consumer spending on clothing and the volume of cotton consumed can vary significantly. Moreover, as cotton prices are more volatile than polyester prices, global cotton consumption typically does not grow smoothly at the long run rate, but has periods of relatively high or low growth.

China's cotton policies are another important source of uncertainty. As the world's largest producer, consumer and importer in the base period, China's developments are important to understand under any circumstance, and its recent policy changes have heightened this importance. During 2011-13, China provided substantially more

support to its cotton farmers than earlier, and did so primarily through maintaining high domestic cotton prices. The results presented are predicated on the assumption that the reforms to its cotton policies in 2014 will be expanded in the following years. While the changes that have been most clearly outlined to date have focused on support for farmers, the government also announced its intention to end its reserve-building policy in 2014. Henceforth, the government will directly subsidise cotton producers in Xinjiang Uyghur Autonomous Region based on a target price. The policy shift is projected to lead to higher consumption and reduced imports by China's textile industry, but possible changes in trade policy could also be used by China to accelerate a reduction in stocks. These changes would have implications for the outlook in other countries as well.

Prospects for productivity gains around the world are another uncertainty, particularly in India. The adoption of GM crops has been associated with an increase in total factor productivity in cotton in China, and significantly higher yields, area and output in India, where the yields are still far below those of many other cotton producers. Producers in India also updated their management practices in other ways during this time, changes which further raised productivity. In the United States, GM adoption and boll weevil eradication have reduced the cost of growing cotton, and in Australia the adoption of GM varieties specific to Australia has also raised productivity. It is likely that these factors account for some of the downward movement of cotton prices relative to other commodity prices since 2000. While many countries have been more cautious in their approach to GM adoption, future productivity growth in countries with low yields will be determined by their adoption of new technologies, including mechanisation and increased input use, as well as GM cotton.

Figure 3.8.8. World cotton production, consumption and stocks



Source: OECD/FAO (2015), "OECD-FAO Agricultural Outlook", *OECD Agriculture statistics* (database), http://dx.doi.org/10.1787/agr-outl-data-en.

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Notes

1. See the glossary for the definition of the marketing year for cotton.
2. In the *Outlook*, cotton is defined as the fibre of various species of *Gossypium*, predominantly *G. hirsutum*. In addition to upland cotton (*G. hirsutum*), the totals for cotton include data for Extra Long Staple (ELS) cotton (*G. barbadense*), which accounts for 2% of world production. All data is on a fibre-basis rather than in terms of un-ginned seed cotton from the first stage of harvesting.
3. See Box 10.1 in *OECD-FAO Agricultural Outlook 2014-2023*, "China's cotton policies drive large changes in world ending stocks."
4. See Box 10.1 in *OECD-FAO Agricultural Outlook 2013-2022*, "Cotton loses share to synthetic fibres".

Table 3.A1.10. **World cotton projections**

Marketing year

		Average 2012-14est	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
WORLD												
Production	Mt	26.0	25.1	25.1	25.4	26.0	26.6	27.3	28.0	28.6	29.3	29.9
Area	Mha	33.2	32.7	32.6	32.7	33.0	33.3	33.8	34.2	34.6	35.0	35.3
Yield	t/ha	0.71	0.77	0.77	0.78	0.79	0.80	0.81	0.82	0.83	0.84	0.85
Consumption	Mt	23.8	25.7	26.3	26.8	27.3	27.7	28.2	28.7	29.2	29.8	30.4
Exports	Mt	8.8	8.0	8.4	8.6	8.8	9.1	9.4	9.7	10.0	10.3	10.5
Closing stocks	Mt	19.2	20.6	19.6	18.4	17.3	16.3	15.6	15.1	14.7	14.4	14.0
Price[1]	USD/t	1 830.6	1 377.3	1 396.5	1 472.6	1 551.9	1 678.2	1 718.3	1 709.1	1 713.3	1 725.6	1 754.9
DEVELOPED COUNTRIES												
Production	Mt	6.1	5.7	5.6	5.6	5.7	5.8	6.0	6.2	6.3	6.4	6.5
Consumption	Mt	1.7	1.8	1.9	1.9	1.9	1.9	1.9	1.9	2.0	2.0	2.0
Exports	Mt	4.8	4.1	4.2	4.2	4.2	4.3	4.4	4.5	4.6	4.7	4.8
Imports	Mt	0.3	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Closing stocks	Mt	1.7	1.9	1.8	1.7	1.7	1.6	1.7	1.7	1.8	1.8	1.8
DEVELOPING COUNTRIES												
Production	Mt	20.0	19.5	19.6	19.9	20.3	20.8	21.3	21.9	22.3	22.8	23.3
Consumption	Mt	22.1	23.9	24.5	25.0	25.4	25.9	26.3	26.8	27.3	27.8	28.3
Exports	Mt	4.0	3.9	4.3	4.4	4.6	4.8	5.0	5.2	5.4	5.6	5.8
Imports	Mt	8.4	7.7	8.1	8.3	8.5	8.8	9.1	9.4	9.7	10.0	10.3
Closing stocks	Mt	17.5	18.7	17.8	16.7	15.6	14.7	14.0	13.4	12.9	12.5	12.2
OECD[2]												
Production	Mt	5.4	5.1	5.1	5.1	5.3	5.3	5.5	5.6	5.7	5.9	6.0
Consumption	Mt	3.2	3.4	3.4	3.4	3.4	3.3	3.3	3.4	3.4	3.4	3.4
Exports	Mt	3.8	3.3	3.5	3.5	3.5	3.6	3.6	3.7	3.8	4.0	4.1
Imports	Mt	1.6	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5
Closing stocks	Mt	1.8	2.2	2.1	1.9	1.9	1.9	1.9	2.0	2.0	2.1	2.1

Note: Marketing year: See Glossary of Terms for definitions.
Average 2012-14est: Data for 2014 are estimated.

1. Cotlook A index, Middling 1 3/32", c.f.r. far Eastern ports (August/July).
2. Excludes Iceland but includes all EU28 member countries.

Source: OECD/FAO (2015), "OECD-FAO Agricultural Outlook", *OECD Agriculture Statistics* (database). doi: http://dx.doi.org/10.1787/agr-outl-data-en

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