



# OECD-FAO Agricultural Outlook 2022-2031



**Report excerpt:**  
Chapter 10 Cotton

# 10 Cotton

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This chapter describes market developments and medium-term projections for world cotton markets for the period 2022-31. Projections cover consumption, production, trade and prices developments for cotton. The chapter concludes with a discussion of key risks and uncertainties which could have implications for world cotton markets over the next decade.

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<https://www.fao.org/documents/card/en/c/cc0308en>

## 10.1. Projection highlights

### *Buoyant market prospects but heightened competition*

World consumption of raw cotton is set to increase for the second consecutive year in 2021/22 (August/July) after the COVID-19 related downturn in 2019/20. Production is anticipated to recover after a drop in 2020/21. In 2021, higher prices of grains and oilseeds coupled with the recovery in global consumption triggered a strong increase in cotton prices, which averaged 40% higher than in 2020.

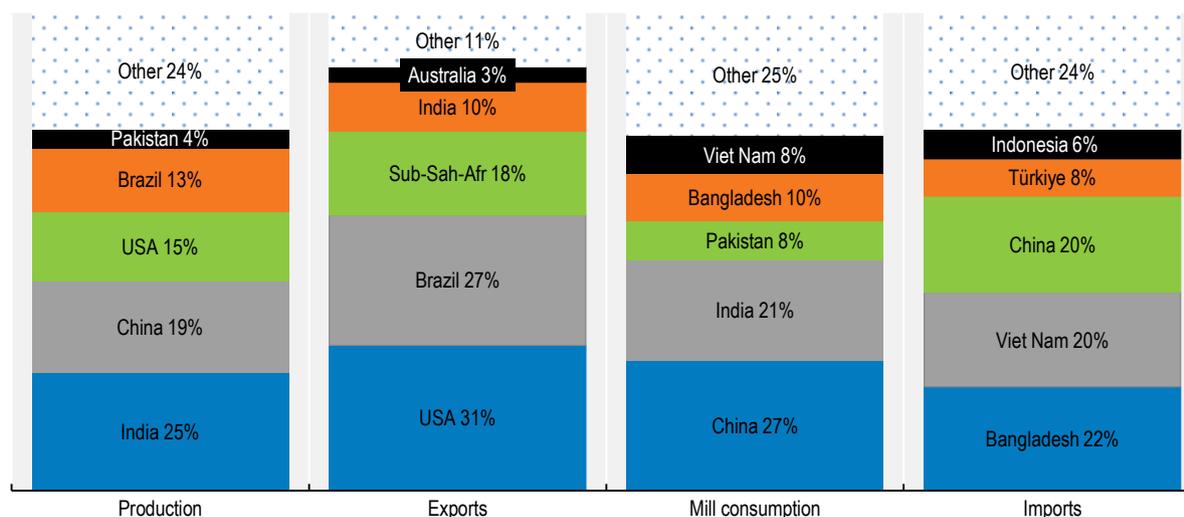
The distribution of cotton use across the globe depends on the location of cotton mills, which are often located in proximity to clothing and apparel industries. Over the past decades, there has been a marked build-up of cotton milling capacity in Asia, especially the People's Republic of China (hereafter "China"). Chinese cotton consumption peaked in 2007 but stabilised at a lower level after 2010, as stricter labour and environmental regulations and rising labour costs have stimulated a move of the industry to other Asian countries, notably Viet Nam and Bangladesh. These latter countries experienced strong growth of their textile industries in recent years and a further increase in their milling capacity is expected over the next decade. By contrast, Chinese cotton consumption has remained constant since 2016 and this year's *Outlook* assumes stability for the coming decade. In India, another major cotton consumer, the growing textile industry coupled with competitive labour cost, and government support to the sector are expected to result in continuous growth in cotton mill use.

World cotton production is projected to grow 1.6% p.a. to reach 30.6 Mt in 2031. This growth will result from an expansion of the harvested area (0.3% p.a.), with increases in the United States and Brazil more than compensating declines in China and Pakistan. The growth in average global yields (1.3% p.a.) is also expected to contribute to the increase in world cotton production. Yields in major producing countries have been stagnating since 2004 because of pest problems and water scarcity. However, improvement in genetics and better agricultural practices are expected to improve yields in the next decade across most producing countries. India will continue to be the world's largest cotton producer, with the increase resulting from higher yields, while area expansion is expected to be limited in line with recent trends.

Cotton is mainly traded in bales of raw cotton fibres. The global trade in raw cotton is projected to surpass 12 Mt by 2031, 27% higher than during the base period. Global trade is therefore expected to grow slightly faster than overall consumption given the demand growth in countries without much domestic cotton production, such as Bangladesh and Viet Nam, and stagnating domestic mill use in Brazil where the projected increase in production is entirely destined for export. The structure of the global cotton market will not change significantly in the coming decade, with Sub-Saharan Africa as a region remaining the third largest exporter of raw cotton in 2031, after the United States (1) and Brazil (2) (Figure 10.1).

After the sharp increase in the past year, cotton prices are expected to remain elevated in 2022, supported by rising consumption and overall higher commodity prices. Over the projection period, however, prices are anticipated to adjust downwards to return to their long term decreasing trend in real term, due to productivity gains and continuing competition with synthetic fibres.

Several uncertainties could affect the outlook. The war, the emergence of new COVID-19 variants and subsequent potential supply chain disruptions could alter the projections of the first years. In addition, the extent to which interest rates will increase to contain inflation could alter the cost of borrowing and hence investment plans in the sector. In general, strong competition from synthetic fibres, notably polyester, is anticipated to continue to adversely affect cotton demand growth over the projection period. However, given the increased adoption of sustainability standards in supply chains, the growth in consumer preferences for more sustainable products is expected to partly offset the overall downward pressure on cotton demand growth. Like other crops, cotton production is sensitive to pests, weather conditions and climate change. Changing policy measures and trade tensions are also sources of uncertainty for cotton markets.

**Figure 10.1. Global players in cotton markets in 2031**

Note: Presented numbers refer to shares in world totals of the respective variable

Source: OECD/FAO (2022), "OECD-FAO Agricultural Outlook OECD Agriculture statistics (database)", <http://dx.doi.org/10.1787/agr-outl-data-en>.

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## 10.2. Current market trends

### *Increases in yields and areas are contributing to steady market growth*

International prices of cotton generally increased in 2021, continuing the upward trend that began in May 2020. In early 2022, cotton prices averaged nearly 50% above their year-earlier levels. High prices are expected to prompt an increase in planted area in the current season and contribute to production gains in several countries, including Brazil and the United States. In India, the world's largest cotton producer, production is also forecast to increase, expected to stem from higher yields, which are projected to more than offset a decline in area. Overall, world cotton production in 2021/22 (August/July) is anticipated to recover from the sharply reduced level in 2020/21 on account of a larger harvested area and higher yields.

World consumption of raw cotton is set to increase for the second consecutive year in 2021/22 after the COVID-19 related downturn in 2019/20. The growth in consumption is forecast in most major consuming textile-producing countries, including in Bangladesh, Indonesia and Viet Nam. By contrast, in China, the world's largest consumer of cotton, a slight year-on-year decline is anticipated, mainly on account of higher cotton yarn imports.

World trade of raw cotton is expected to decrease from the 2020/21 record level but will still remain at one of its highest historical levels. Cotton exports from the main exporter, the United States, are expected to decline from the high volumes of the previous year mainly due to logistical constraints. Similarly, in Brazil, exports are anticipated to decrease from the record volumes in 2020/21. On the import side, in China imports in 2021/22 are foreseen to decline significantly from the multi-year highs of the previous year, reflecting lower consumption and ample availabilities from last year's imports. Purchases of cotton are expected to remain relatively stable in Bangladesh, while in Viet Nam imports should increase.

## 10.3. Market projections

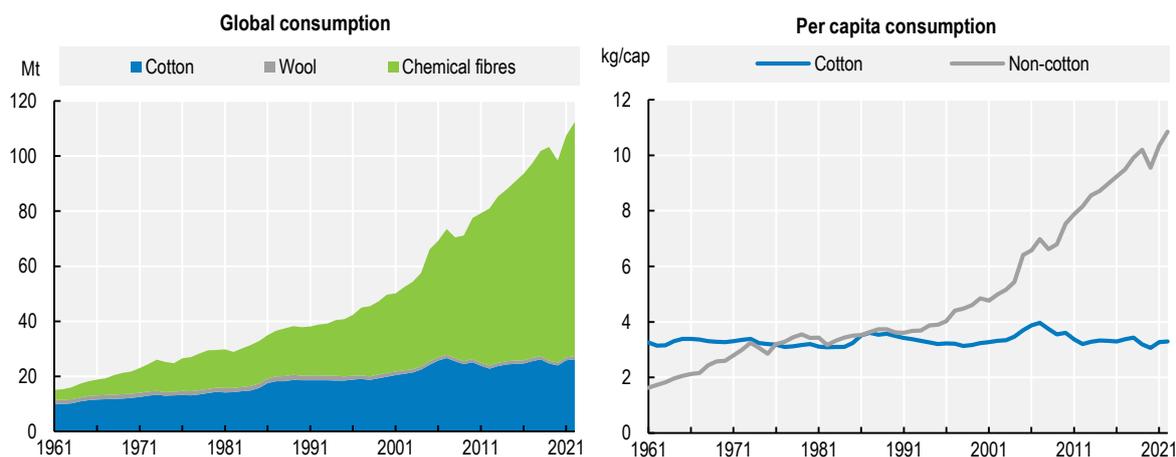
### 10.3.1. Consumption

#### *Viet Nam and Bangladesh displacing China in leading growth in consumption*

Cotton consumption refers to the use of cotton fibres by mills to produce yarn. Mill use of cotton depends on the global demand for textiles and on competition from substitutes such as polyester and other synthetic fibres. Over the past decades, global demand for textile fibres has grown strongly, driven by population and income growth, but most of this demand has been increasingly met by synthetic fibres (Figure 10.2). Per capita consumption of non-cotton fibres overtook that of cotton in the early 1990s and has continued to grow strongly ever since. By contrast, over time global per capita consumption of cotton fibres has increased marginally and has decreased in recent years. After the peak of nearly 27 Mt in 2007, global cotton consumption decreased to around 25 Mt in 2019-21, due to its deterioration in competitiveness relative to polyester.

The prospects for global cotton use depend on its evolution in developing and emerging economies. Demand from developing regions with lower absolute levels of consumption but higher income responsiveness is projected to exert upward pressure on global demand for cotton as the incomes and population of these countries are projected to increase. As a result, this Outlook expects that global consumption of cotton products will grow at a slightly higher pace than global population in the coming decade. Correspondingly, global mill use is projected to grow by around 1.6% p.a. over the next decade.

**Figure 10.2. Historical trends in consumption of textile fibres**



Source: ICAC World Textile Demand estimates, 2022

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The distribution of demand for cotton fibres depends on the location of spinning mills, where cotton and synthetic fibres are spun into yarn. The greatest amount of yarn spinning occurs in countries where downstream industries are located, mostly in Asian countries with lower labour costs. China has been the world's largest consumer of cotton since the 1960s. Major shifts are taking place, however, with yarn production gradually moving from China to other Asian countries.

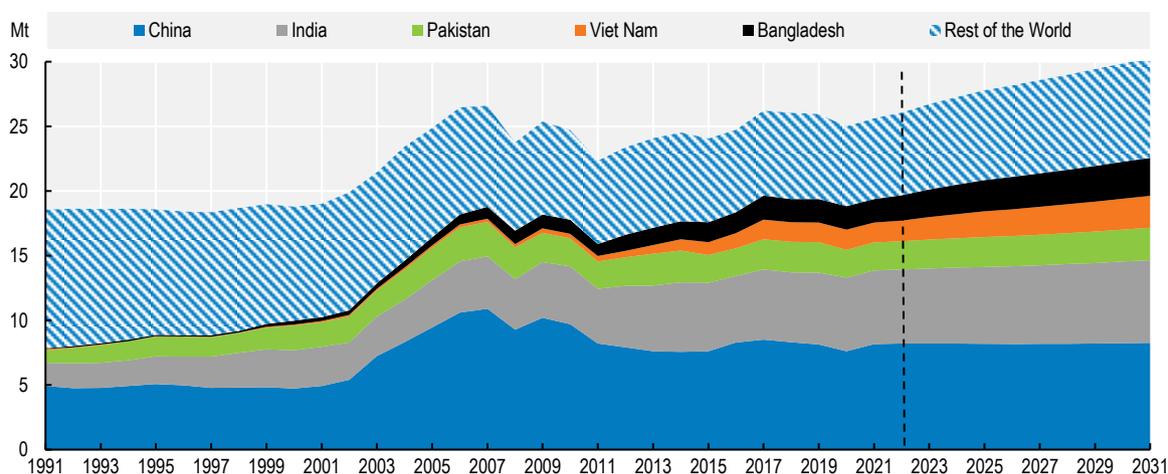
China's cotton mill consumption has been decreasing since the support price system was abolished in 2014. The artificially higher prices had caused a shift in demand from cotton to synthetic fibres. The decline

in cotton demand also reflects structural change as higher labour costs and more stringent labour and environmental regulations. This provoked a move to other Asian countries, notably Viet Nam and Bangladesh. In recent years, mill consumption has regained some lost ground in China, in part because domestic cotton prices have become more competitive when compared to polyester, which appears to have suffered a setback due to government measures to combat industrial pollution. Chinese spinning mill use should remain stable over the next decade if margins are remunerative at the mills.

In India, the growing textile industry coupled with competitive labour cost, and government support to the sector are expected to result in continuous growth in cotton mill use. Cotton plays an important role in the Indian economy as the country's textile industry is predominantly cotton based. The textile industry represents an important component of the country's industrial production and is one of the largest sources of employment. The industry, however, faces several challenges, including technological obsolescence, high input costs, and poor access to credit. Thus, the government has been implementing several measures to support industry development. In September 2021, it approved the Production Linked Incentive (PLI) scheme for textiles to boost the high value man-made fibres (MMF) fabric, garments, and technical textiles segments in the country.

The phase-out in 2005 of the Multi-Fibre Arrangement (which had fixed bilateral quotas for developing country imports into Europe and the United States) was expected to favour Chinese textile producers at the cost of smaller Asian countries. In practice, countries such as Bangladesh, Viet Nam, and Indonesia experienced strong growth of their textile industry based on an abundant labour force, low production costs, and government support measures. In addition, the escalation of the United States-China trade dispute has spurred additional mill use in Bangladesh and Viet Nam. In the case of Viet Nam, this was partly driven by its accession to the World Trade Organization in 2007 and by foreign direct investment (FDI) by Chinese entrepreneurs.

**Figure 10.3. Cotton mill consumption by region**



Source: OECD/FAO (2022), "OECD-FAO Agricultural Outlook OECD Agriculture statistics (database)", <http://dx.doi.org/10.1787/agr-outl-data-en>.

StatLink  <https://stat.link/4dryzn>

The rapid growth in these countries is expected to continue over the outlook period, with Bangladesh and Viet Nam expanding their mill use by 60% and Indonesia by 33% relative to the base period. In Viet Nam, the ratification of the Free Trade Agreement (FTA) with the European Union in mid-2020 is expected to

contribute to the growth in cotton mill use. In Bangladesh, growing demand for yarns is spurring investments in new spinning facilities or in expanding production capacity of existing mills. Further growth is also expected in Türkiye and Central Asia, where the textile industry is expanding thanks to new investments in yarn production facilities and to growing exports to the European Union and the Russian Federation. In Pakistan, government's efforts to attract foreign investments and improve its production capacity are expected to spur growth in the textile sector over the outlook period, with cotton consumption foreseen to grow by 14% relative to the base period.

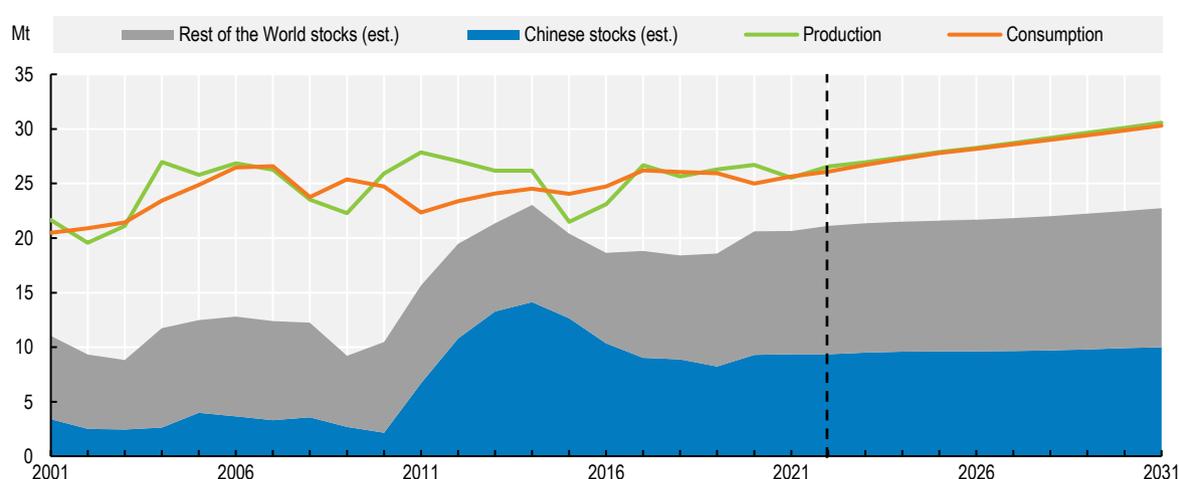
### 10.3.2. Production

#### *Global production growth from improved yields in Asia, and more focus on sustainability*

Cotton is grown in subtropical and seasonally dry tropical areas in both the northern and southern hemispheres, although most of the world's production takes place north of the equator. The main producing countries are India, China, the United States, Brazil, and Pakistan. Together, these countries account for more than three-quarters of global production (Figure 10.1).

Global cotton production is expected to grow steadily to 30.6 Mt by 2031, 17% higher than in the base period (Figure 10.4). Most of this production growth in the coming decade is expected to come from the main producing countries, with India accounting for about 25% of the global increase. At the global level, gains in cotton production are projected to stem mainly from higher yields, which are expected to increase by 14% compared to the base period, reflecting improved genetics and better agricultural practices. In the last decade, global yields have been stagnant, reflecting static or decreasing yields for some major producers (United States, Pakistan, India), declining cotton area in China (where yields are well above average), and expanding cotton area in India (where yields are well below average). Over the projection period, cotton area is projected to expand by 3% compared to the base period.

**Figure 10.4. World cotton production, consumption, and stocks**



Note: est. stands for estimate.

Source: OECD/FAO (2022), "OECD-FAO Agricultural Outlook OECD Agriculture statistics (database)", <http://dx.doi.org/10.1787/agr-outl-data-en>.

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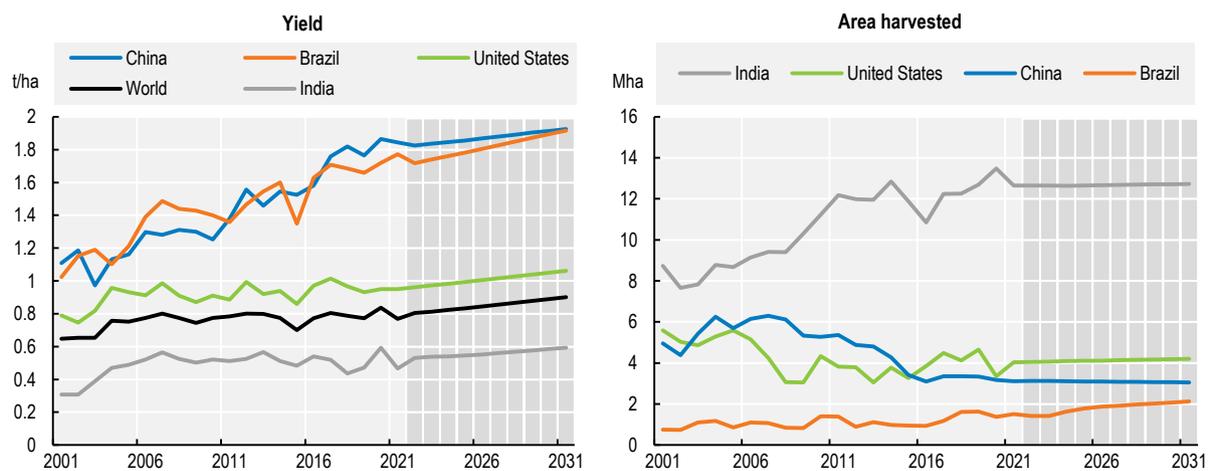
Production in India is projected to grow by around 1.3% p.a. over the outlook period, mainly on account of higher yields rather than area expansion, since cotton already competes for acreage with other crops. Raw

cotton productivity has remained stagnant in recent years and is among the lowest globally, as producers struggle with adverse weather, pests and diseases. In addition, most cotton is grown on small farms, which limit the adoption of intensive farming technologies. However, growing demand from the domestic apparel industry continues to spur investments in the sector and this *Outlook* assumes a growth in yields that reflects increased use of smart mechanisation, varietal development, and pest management practices. Nonetheless, climate change, with most cotton grown under rain-fed conditions, may undermine the yield growth potential.

Chinese cotton producers currently achieve yields that are more than double the world average. Since further improvement may become more difficult, its yield growth is projected to slow down to 0.6% p.a. Although in general the cotton area in China has been declining over the past two decades, mostly due to changing government policies, this trend seems to have slowed down since 2016. The cotton area in China is expected to decrease by 0.3% p.a.

In Brazil, cotton is grown in part as a second crop in rotation with soybeans or maize, and output has recently grown strongly in the main growing areas, such as Mato Grosso. Favourable growing conditions and a high rate of adoption of modern technologies have contributed to rising cotton yields and areas over recent years. These factors should support further strong production growth of 6% p.a.

**Figure 10.5. Cotton yields and area harvested in major producing countries**



Source: OECD/FAO (2022), "OECD-FAO Agricultural Outlook OECD Agriculture statistics (database)", <http://dx.doi.org/10.1787/agr-outl-data-en>.

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Sustainability considerations will continue to influence future demand and supply of cotton. As shown in Table 10.1, the share of cotton lint produced under special sustainability or organic standards has increased steadily since 2010. In 2018, it reached a share of 25%. Among the existing standards, the Better Cotton Initiative dominates globally, accounting for more than 45% of sustainable cotton supply in 2018, followed by the Responsible Brazilian Cotton initiative with 35%. Brazil, where about 80% of cotton production is certified under these two initiatives, plays a leading role in global sustainable cotton production. Sustainable and organic segment will likely continue to grow in the future with the implication that this will lead to an increased need for transparency and traceability along the supply chain.<sup>1</sup>

**Table 10.1. Sustainable and organic cotton production**

	Total production (1000t)	Sustainable and organic cotton production (1000t)	% share / total world production
2010	25 869	185	1%
2011	27 856	578	2%
2012	27 079	1 289	5%
2013	26 225	1 490	6%
2014	26 233	2 465	9%
2015	21 640	3 211	15%
2016	23 196	3 609	16%
2017	26 798	5 375	20%
2018	25 972	6 400	25%

Note: 2019 estimated from International Cotton Advisory Committee (ICAC).

Source: International Cotton Advisory Committee (ICAC), [www.icac.org](http://www.icac.org).

### 10.3.3. Trade

#### *World cotton trade to expand mainly due to strong demand from Asian countries*

World cotton trade is projected to expand steadily over the next decade and reach 12.4 Mt in 2031, 27% higher than in the base period. The increase mainly reflects the significant growth in mill use in Asian countries, particularly Viet Nam and Bangladesh, which source virtually all their cotton from imports. By 2031, imports in China are projected to increase by 8%, and in Bangladesh and Viet Nam by 60%, in line with mill consumption growth. These three countries will account for more than half of global cotton imports (Figure 10.1), with Bangladesh as the world leading raw cotton importer.

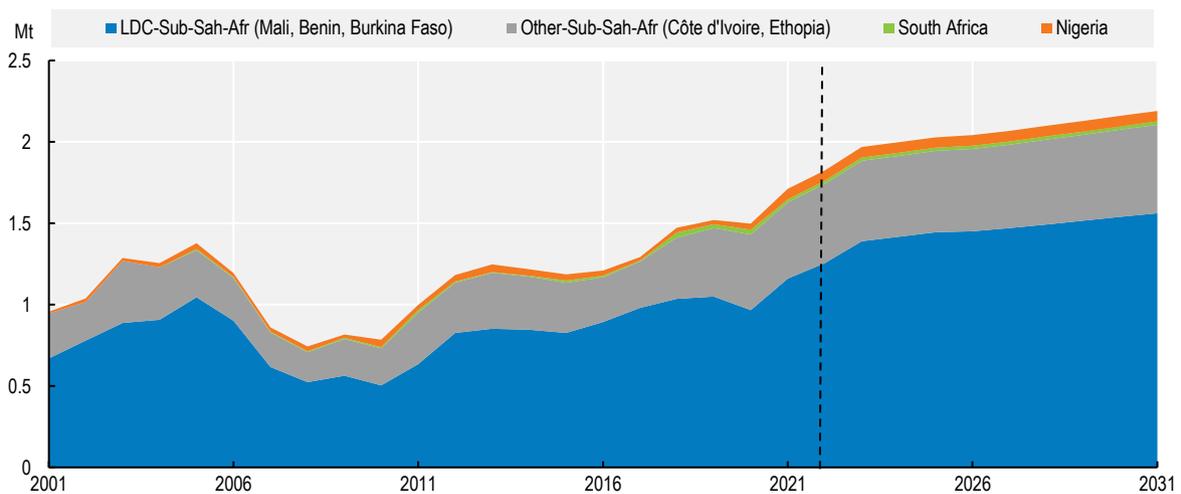
The United States will remain the world's largest exporter throughout the outlook period. Its exports have stabilised in recent years, recovering from the lows in 2016, and its share of world trade is projected at 31% in 2031, compared to a 34% in the base period. Recent trade tensions between the United States and China have placed some pressure on cotton shipments between the countries. Under the assumption of better trade relations in the future, the United States should regain its share in Chinese cotton imports.

Brazilian exports are expected to grow strongly over the next decade, consolidating its position as the second largest exporter by 2031. India will follow in third place with shipments projected at 1.3 Mt by 2031, 25% higher than in the base period.

Cotton is an important export crop for Sub-Saharan Africa, which currently accounts for 16% of global exports. Overall, cotton production in the region has increased in the past several years, because of both increased area and improved yields. In the current season, higher prices have led to a significant increase in area, which fully recovered from the drop in 2020. However, spinning mill consumption remains limited throughout Sub-Saharan Africa, as many countries export most of their produce.

Sub-Saharan African exports are projected to continue growing at around 1.7% p.a. in the coming decade, with the region's market share increasing by more than 1 percentage point to nearly 18% compared to the base period, with South and Southeast Asia the major export destinations. However, the textile and apparel industry is growing in some other countries, especially Ethiopia, where efforts are being made to enhance the processing capacities across the region. The expansion has been driven by favourable economic conditions, resulting in significant FDI in the sector. In the long run, this could imply an increase in mill use and affect the net export status of Sub-Saharan Africa.

**Figure 10.6. Cotton exports in Sub-Saharan Africa**



Source: OECD/FAO (2022), "OECD-FAO Agricultural Outlook OECD Agriculture statistics (database)", <http://dx.doi.org/10.1787/agr-outl-data-en>.

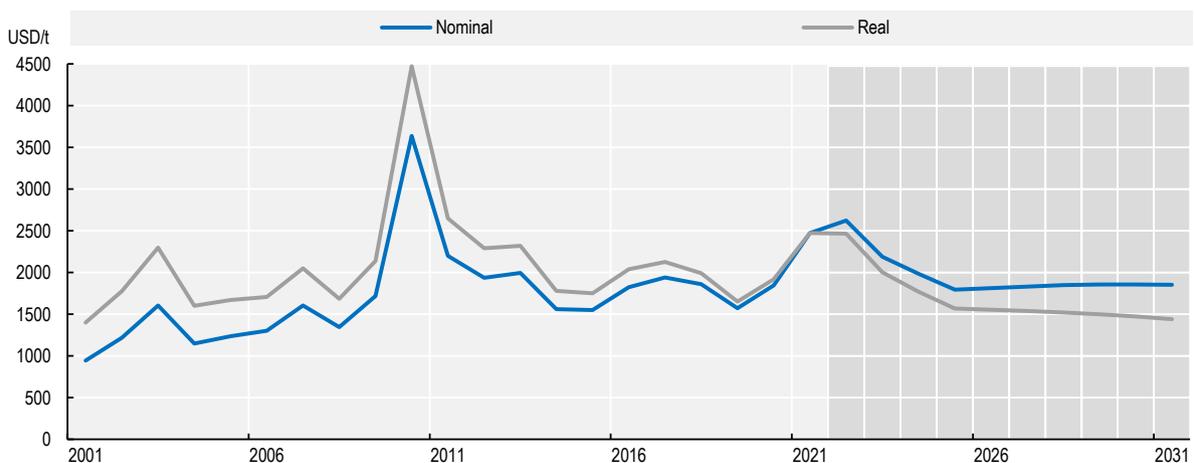
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### 10.3.4. Prices

*International cotton prices will adjust to competition from synthetic fibres*

International cotton prices are expected to remain elevated in 2022 supported by rising consumption and overall higher commodity prices but then to decrease in real terms throughout the outlook period. Global cotton demand remains under pressure from synthetic fibres, notably polyester.

**Figure 10.7. World cotton prices**



Note: Real prices are nominal world prices deflated by the US GDP deflator (2021=1). The reference cotton price is the Cotlook price A index, Middling 1 1/8", CFR for Eastern ports. Data shown represent the marketing year average (August/July).

Source: OECD/FAO (2022), "OECD-FAO Agricultural Outlook" OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>

StatLink  <https://stat.link/wgud81>

From the early 1970s, when polyester became price-competitive, cotton prices tended to follow polyester prices. For example, cotton prices were only 5% above polyester staple fibre prices between 1972 and 2009. Since 2010, however, cotton prices have been on average almost 40% above the polyester price, in nominal terms. Over the past year, cotton prices have increased at a faster pace than those of polyester, resulting in a wider price differential. However, it is assumed that the relative competitiveness between these two types of fibre will not change drastically over the projection period.

## 10.4. Risks and uncertainties

### *Policies and practices concerning genetics could play a key role*

Economic growth and urbanisation will continue to be the main factors affecting the per capita demand for cotton textiles in developing and emerging economies. Since the consumption of textiles and apparel is more income responsive than the consumption of food commodities, deviations from the economic conditions assumed for the developing world could lead to important changes in global cotton consumption, production, and trade projections.

In the short term, projections will likely be affected by rising energy prices coupled with the impact of Russia's war against Ukraine, which may slow the global economic growth. In addition, the emergence of new COVID-19 variants and subsequent movement restrictions may further hamper overall economic recovery. Moreover, rising energy prices and supply chain disruptions have resulted in higher inflation. The extent to which interest rates will be raised to contain inflation could also alter the cost of borrowing and hence investment plans in the sector.

Other demand trends could affect the projections. For example, recycling by the textile industry is creating a competitive secondary market that provides raw material to producers of lower-quality textiles and non-textile products. This trend could further reduce the demand for cotton and other fibres. On the other hand, greater adoption of sustainability standards in supply chains could provide additional stimulus to the demand for cotton.

Like other crops, cotton production is sensitive to pests and weather conditions. These projections are therefore sensitive to climate change, which could lead to increasing frequency of droughts and other adverse weather conditions. As noted above, yield growth has been slow in several countries over the past decade. Faster than expected improvements in genetics and gene editing (e.g. facilitated in part by a better understanding of the cotton genome) and better pest management have the potential to lead to higher yield growth than the projections in this *Outlook*. However, such innovations take time to develop and deploy, and in the case of genetically modified cotton are sometimes controversial. In India, pink bollworm has evolved resistance to Bt cotton, resulting in significant crop losses. In Burkina Faso, the introduction of Bt cotton in 2008 was effective in combatting bollworms but resulted in a shorter staple length (and hence lower quality premiums). This prompted the government to phase out Bt cotton in 2015.

Policies also play an important role in global cotton markets, notably stockholding measures. Other policy initiatives, such as support for domestic textile industries, input subsidies, may affect projections. Trade policies and tensions may also play a role in affecting the development of the raw cotton markets. In recent years, the cotton market has been impacted by the US-China trade dispute. In early 2021, the United States banned all products made in part or entirely from cotton produced in the Xinjiang region. Issues associated with social, economic, and environmental sustainability are becoming increasingly important for consumers, industry, and policy makers in many countries.

Policy measures that affect consumption include, for example, several East African countries that are increasingly discouraging second-hand clothing imports. This could bolster cotton consumption and

encourage more added value in Africa. In West Africa, efforts from the government and the private sector are being made to increase cotton processing capacities across countries

## Note

<sup>1</sup> FAO (2021), Recent trends and prospects in the world cotton market and policy developments. Rome. <https://doi.org/10.4060/cb3269en>.