

Polyester & Cotton: Unequal Competitors

AFCOT – 6 October 2011 – Deauville

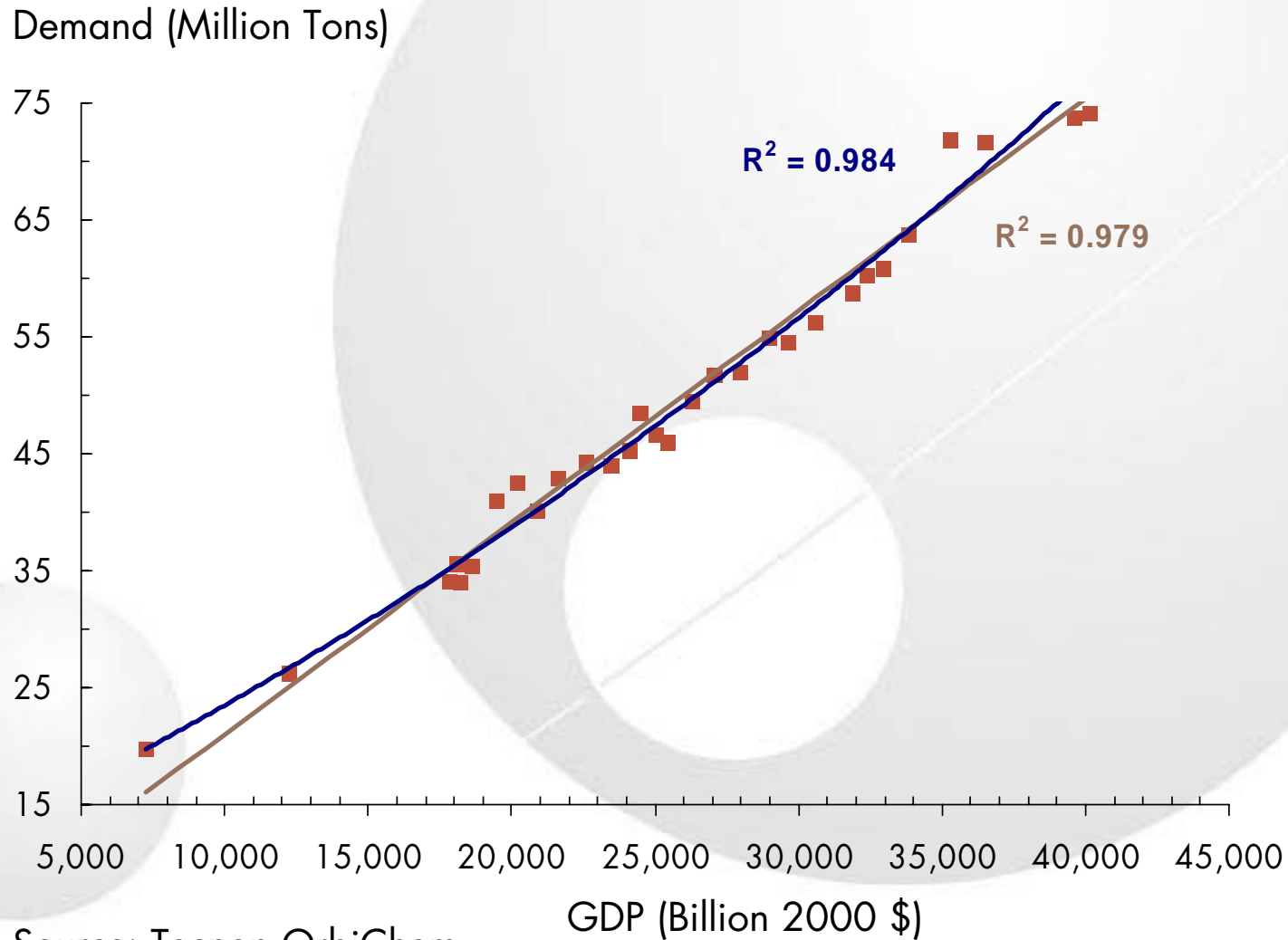
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Business Manager, Polyester & Intermediates

Tecnon OrbiChem

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WORLD FIBRE DEMAND vs GDP - 1960-2009

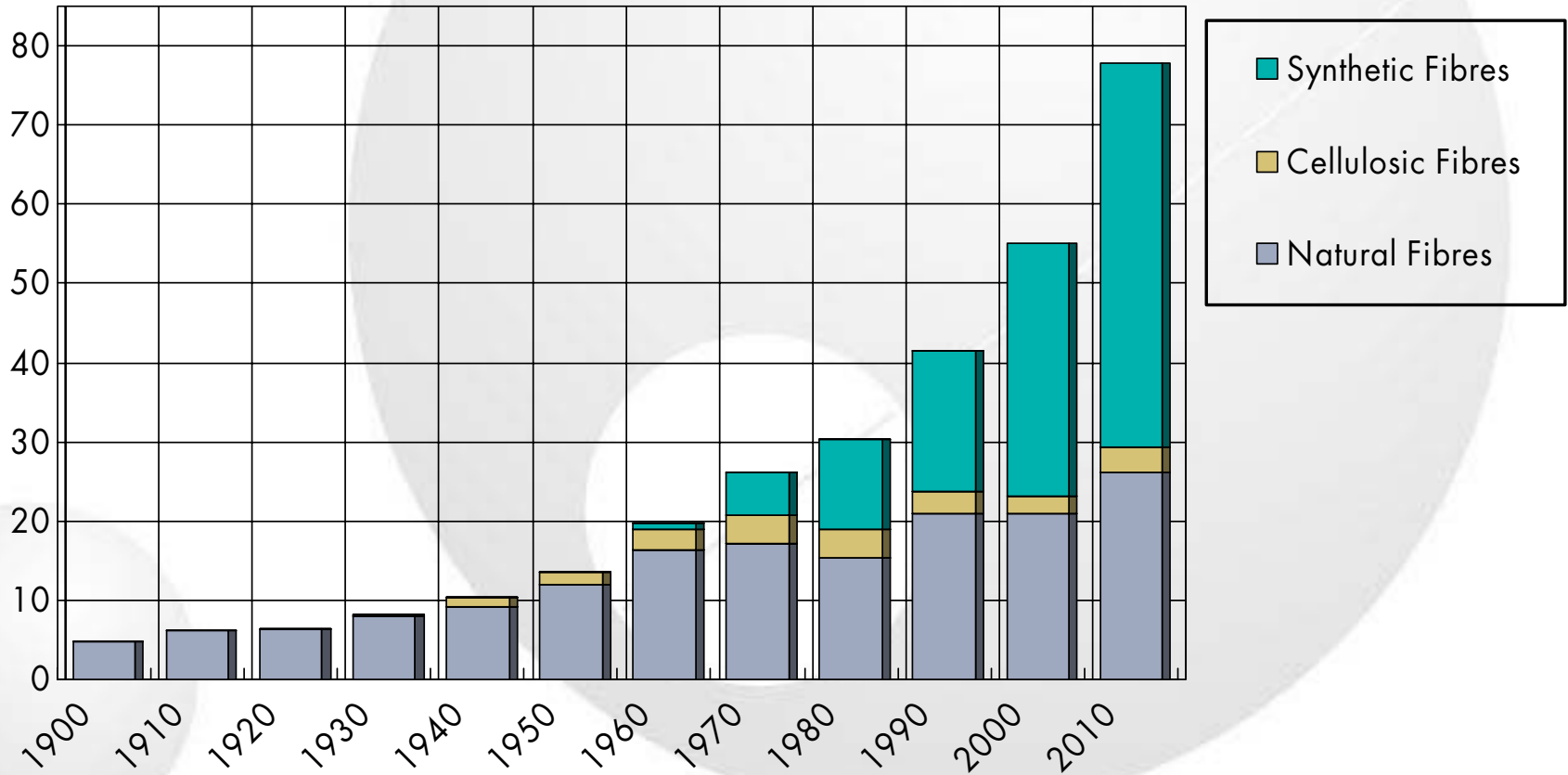


Source: Tecnon OrbiChem

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WORLD FIBRES DEMAND 1900-2010

Million Tons

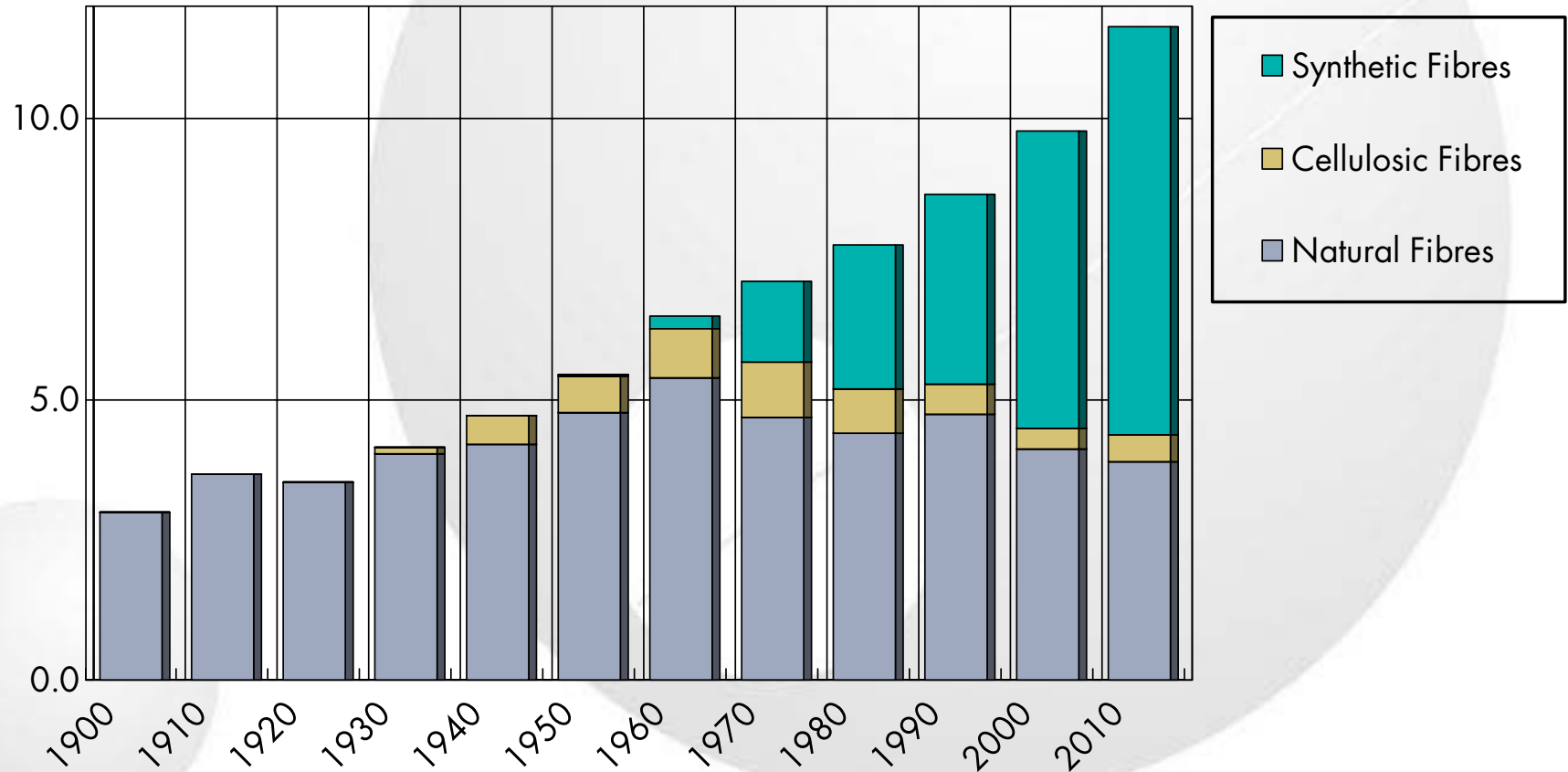


Source: Tecnon OrbiChem

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WORLD PER CAPITA FIBRES CONSUMPTION

Kg/Head

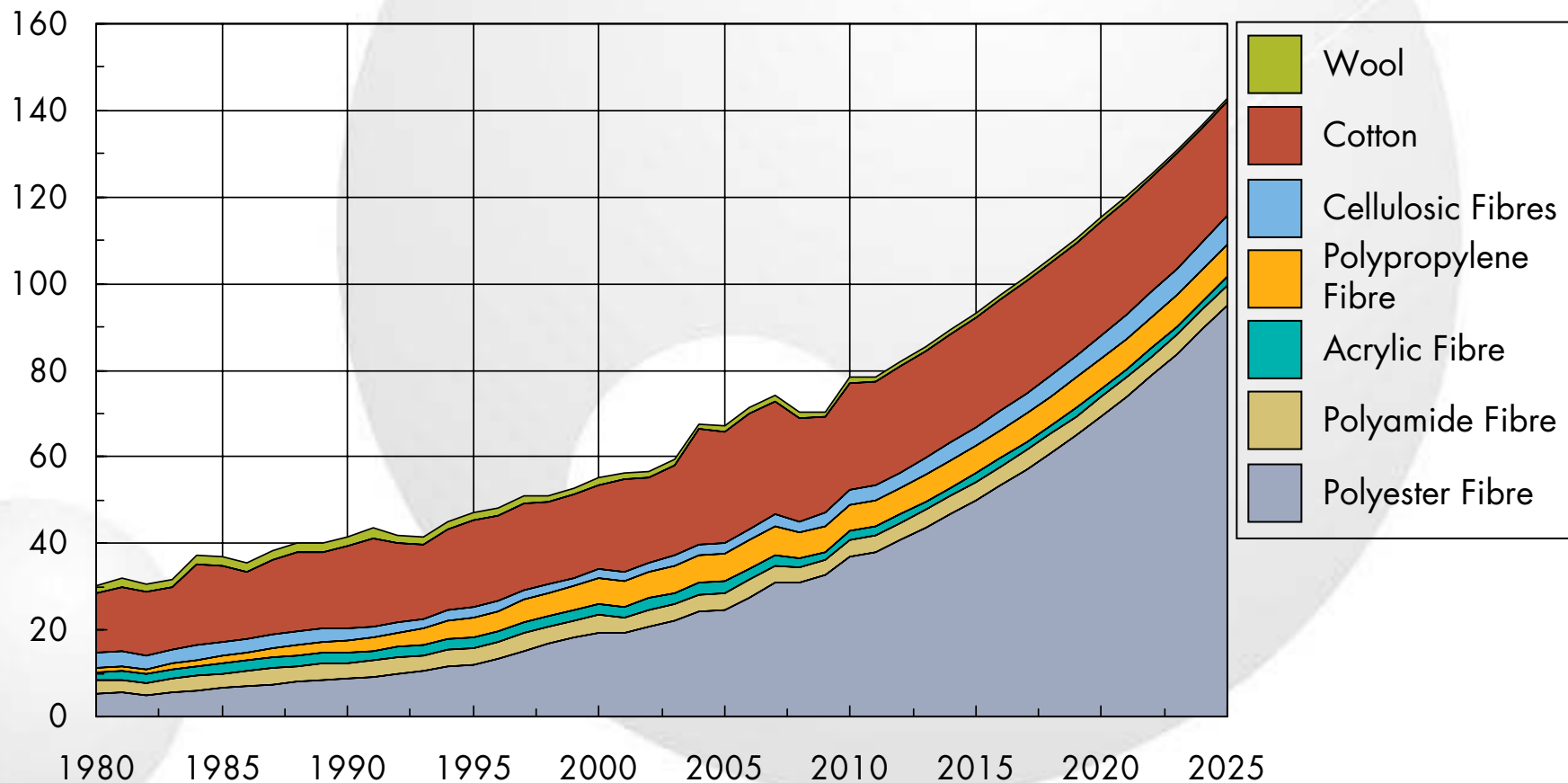


Source: Tecnon OrbiChem

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WORLD FIBRE PRODUCTION 1980-2025

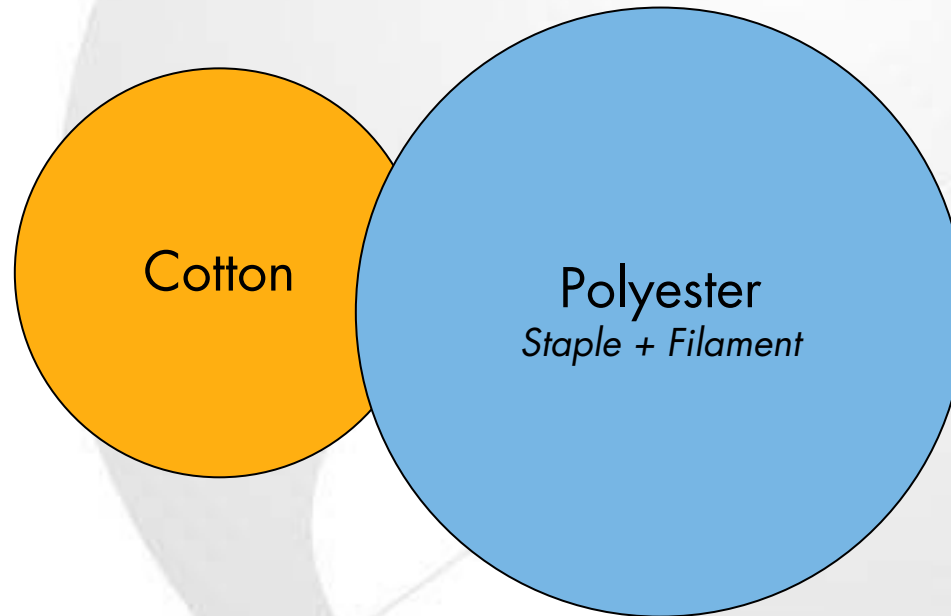
Million Metric Tons



Source: Tecnon OrbiChem

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WORLD PRODUCTION 2010: COTTON vs POLYESTER

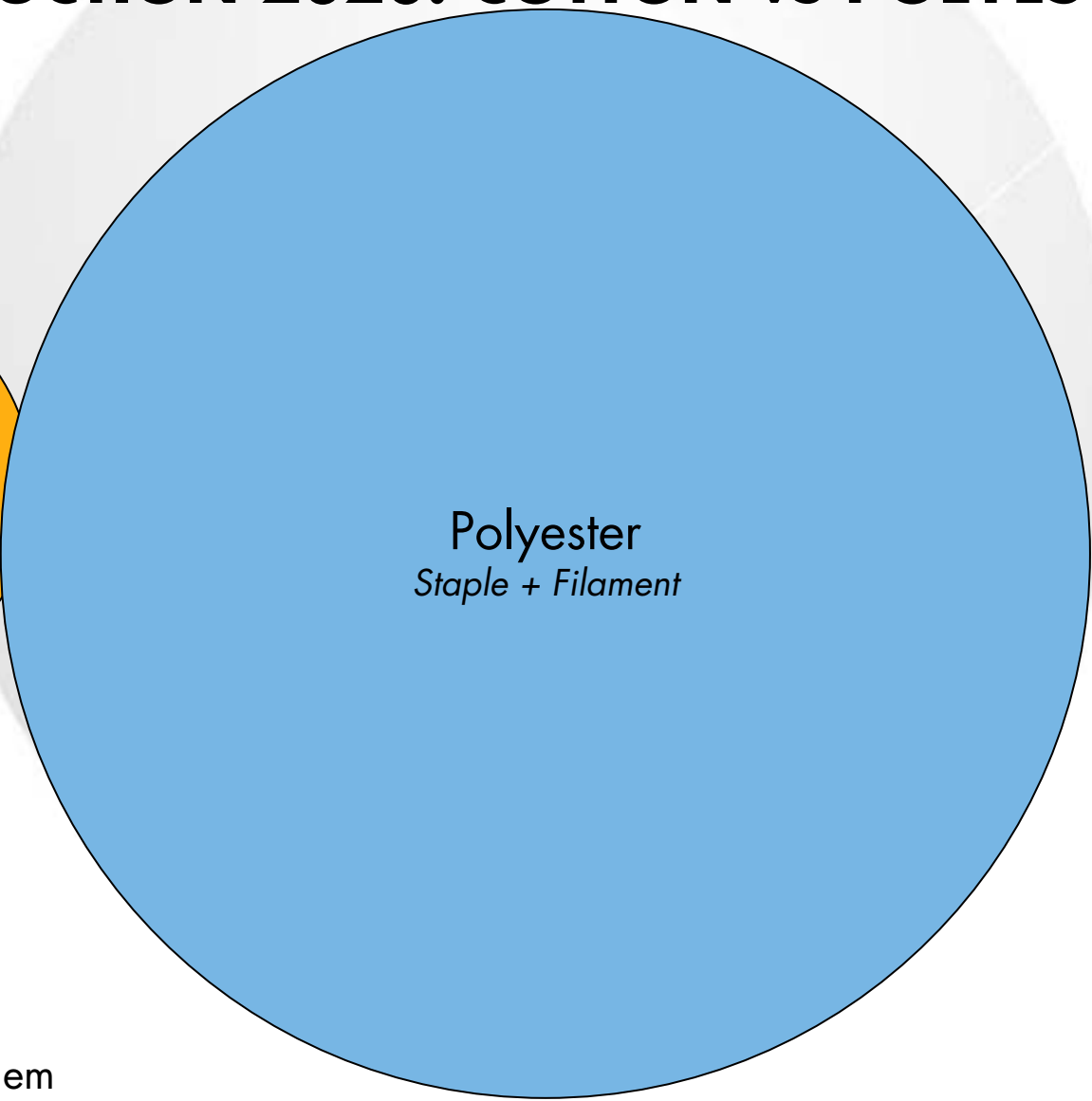
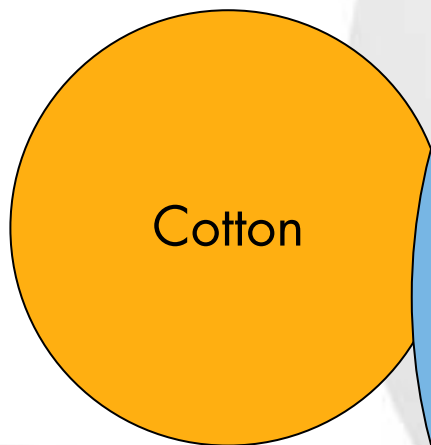


2010

Source: Tecnon OrbiChem

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WORLD PRODUCTION 2020: COTTON vs POLYESTER



2020

Source: Tecnon OrbiChem

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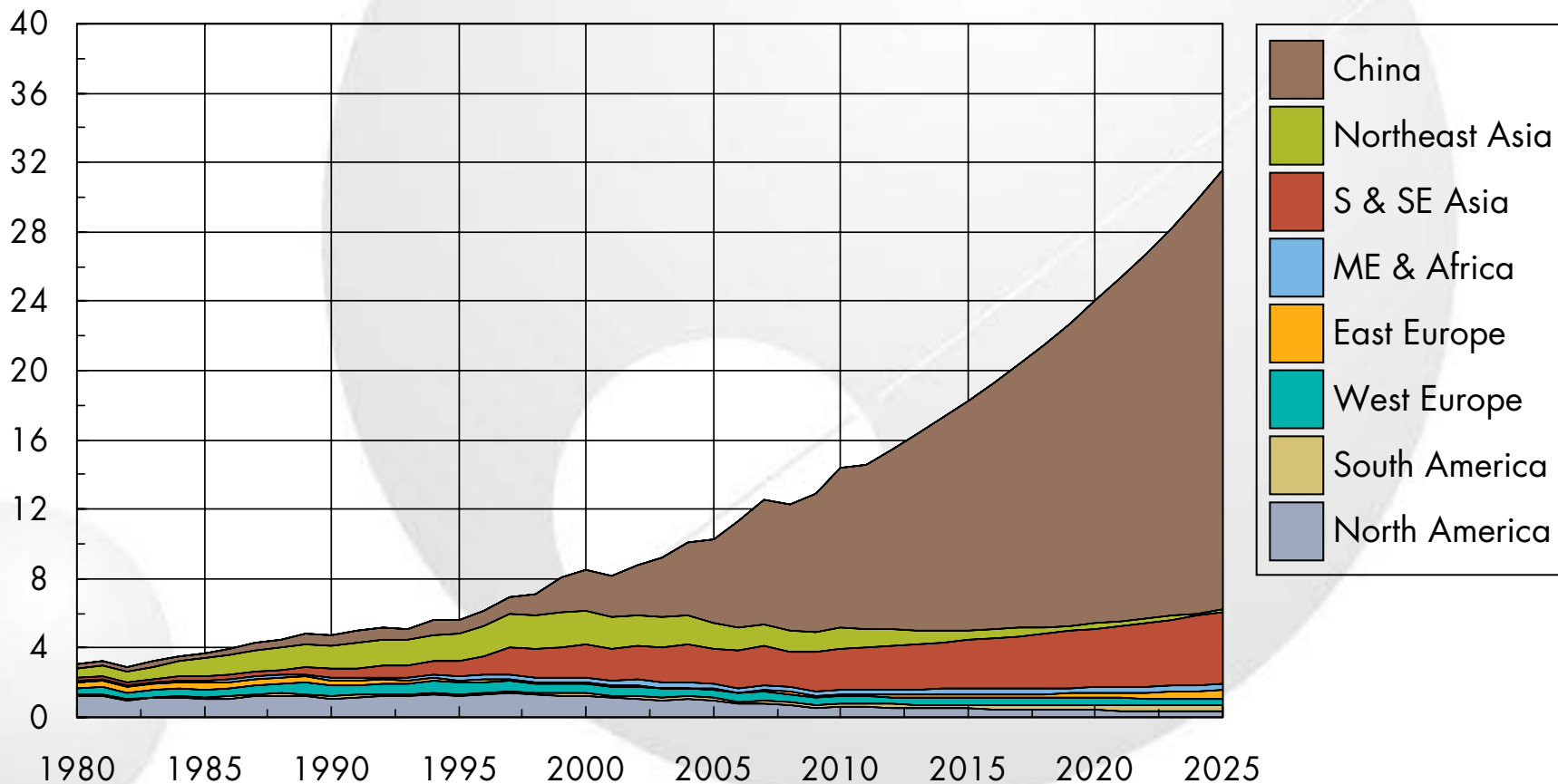
UNEQUAL COMPETITORS: COTTON vs POLYESTER

- Global cotton production is approaching its physical maximum (ICAC).
- Per capita demand for fibres continues to grow with rising GDP.
- Global population continues to increase.
- Synthetic fibre production is already greater than cotton production and will continue increasing to satisfy growing demand.
- By 2020, polyester production will be 2.5 times greater than cotton production.
- The cotton markets is more vulnerable to competition from polyester than vice versa.

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WORLD POLYESTER STAPLE PRODUCTION

Million Metric Tons



Source: Tecnon OrbiChem

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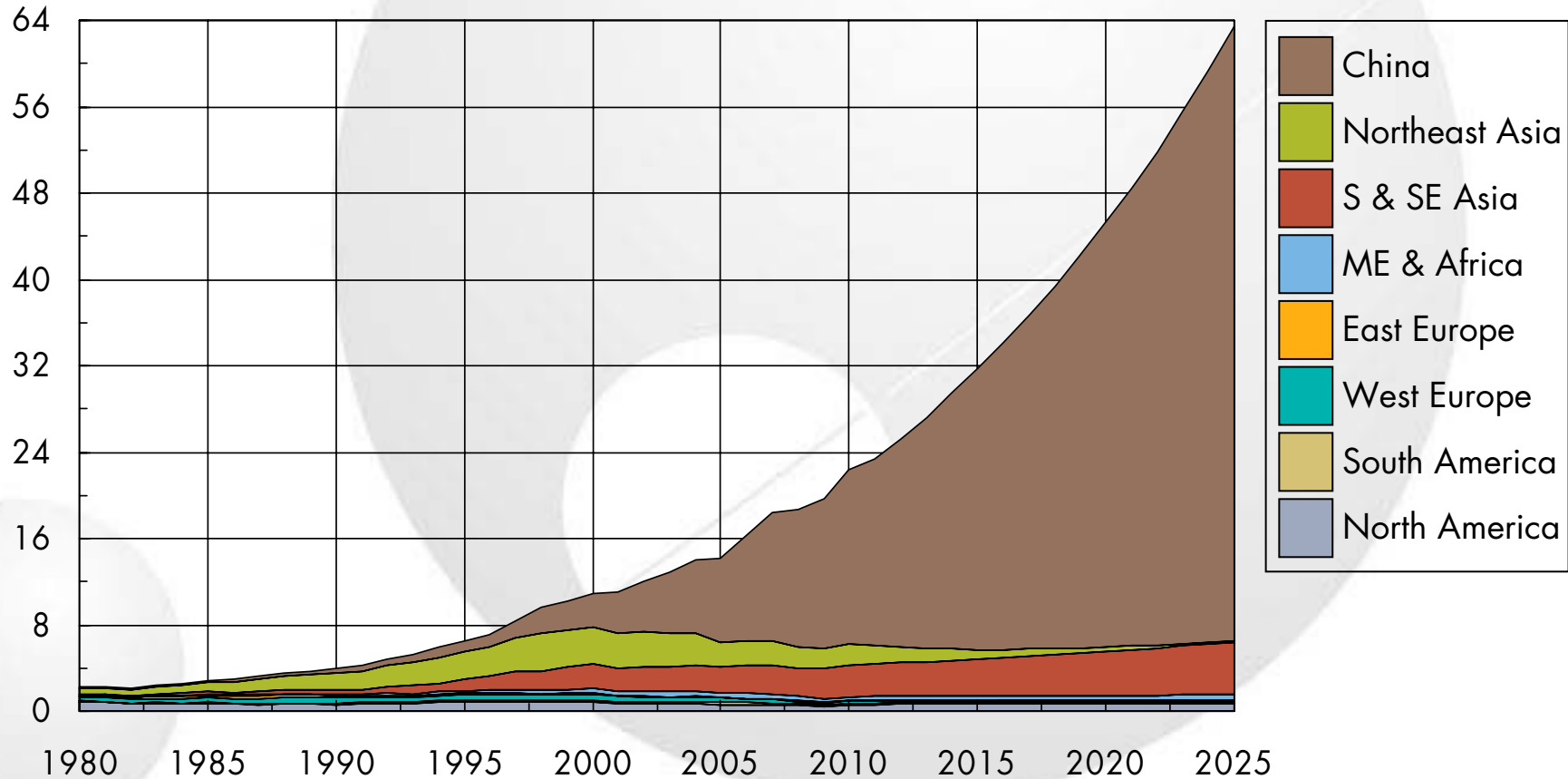
POLYESTER STAPLE SUMMARY

- World production of polyester staple has grown at an average rate of 6.5% per year during the past decade.
- The world situation is dominated by China, which accounted for almost 65% of the global total in 2010, and other Asian countries (together 90%)
- Global production of polyester staple is forecast to rise by an average of 5.4% per year through 2025, compared with 4.1% for all fibres.
- The use of recycled raw materials for the production of polyester staple is growing and accounts for almost 50% in some regions.
- High cotton prices have encouraged substitution with polyester staple, but this trend is slowing as cotton prices decline.
- Polyester staple fibre is easily interchanged with cotton.

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WORLD POLYESTER FILAMENT PRODUCTION

Million Metric Tons



Source: Tecnon OrbiChem

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POLYESTER FILAMENT SUMMARY

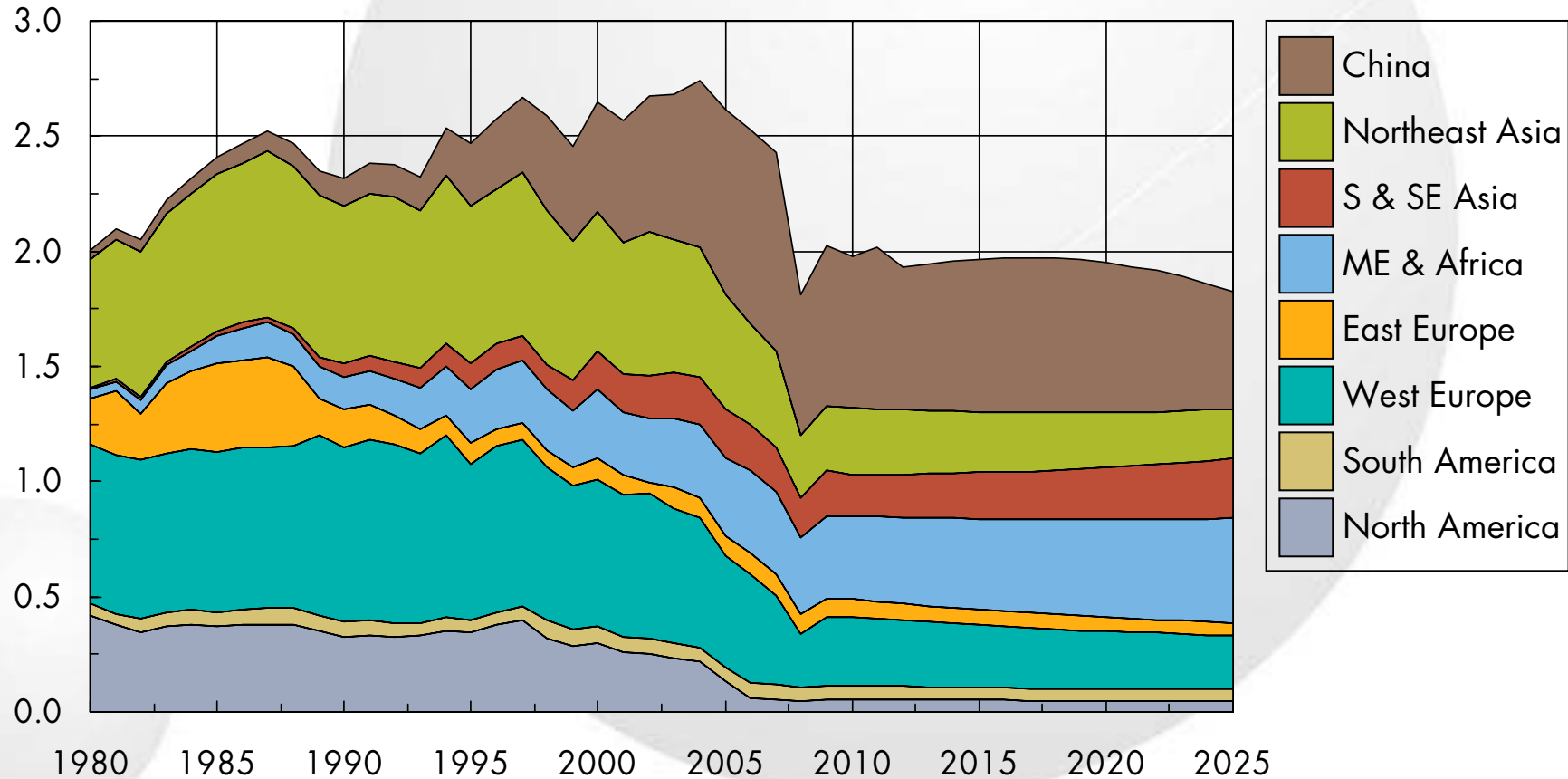
- World production of polyester filament has increased by an average of 8.2% pa during the past decade.
- As with staple, China dominates global polyester filament production, accounting for 72% of the global total in 2010.
- Global filament production is expected to grow at an average annual rate of 7.2% through 2025, driven by China and to a lesser extent India.
- Filament production has declined by 9.4% in West Europe over the past decade.
- Production of bulked continuous filament for carpets in the US is growing, but total polyester filament production declined by 1.8% from 2001 to 2010.
- Use of recycled raw materials in filament is not as extensive as in staple but continues to grow rapidly from a small base.

Source: Tecnon OrbiChem

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WORLD ACRYLIC FIBRE PRODUCTION

Million Metric Tons

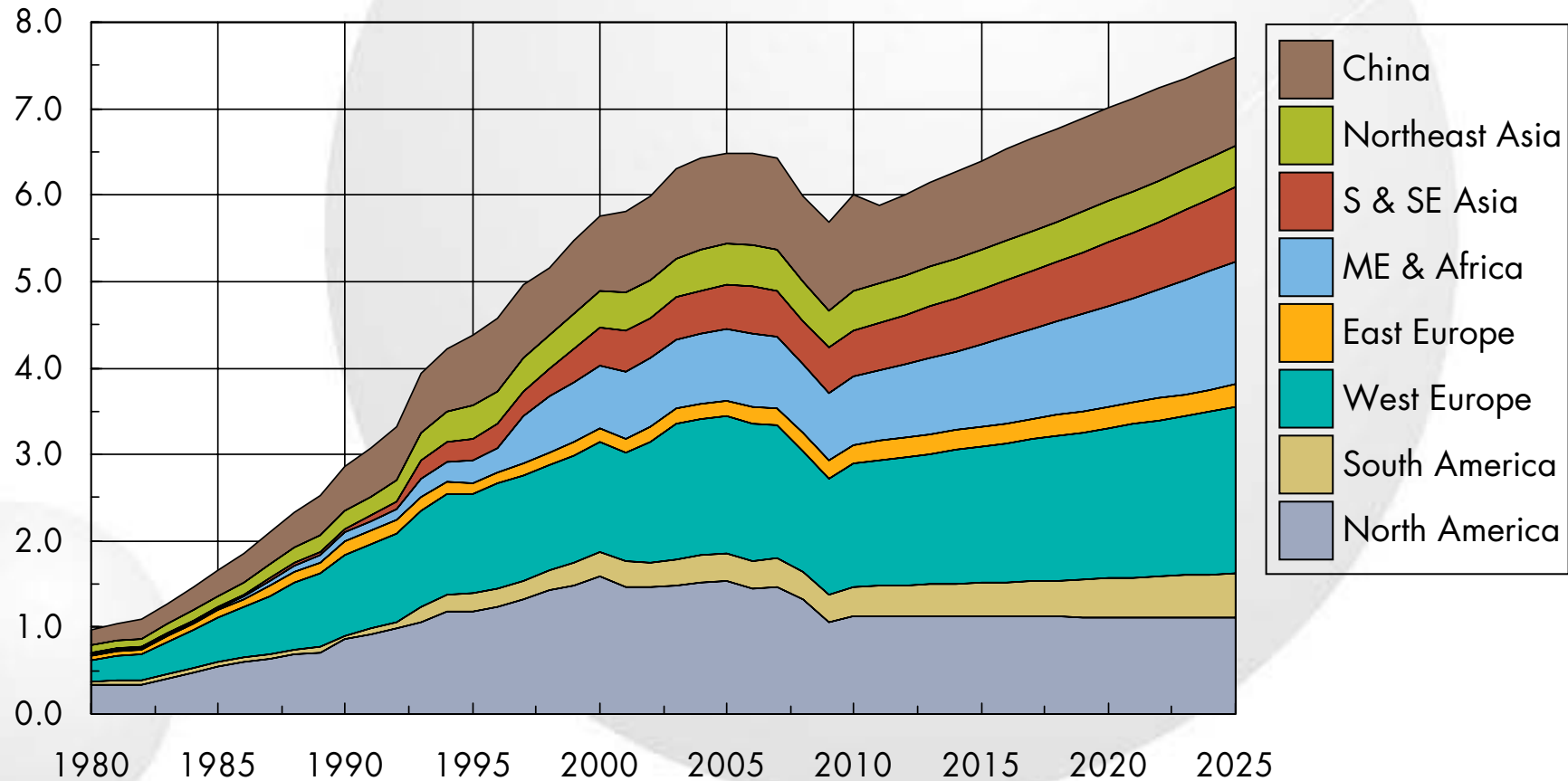


Source: Tecnon OrbiChem

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WORLD POLYPROPYLENE FIBRE PRODUCTION

Million Metric Tons

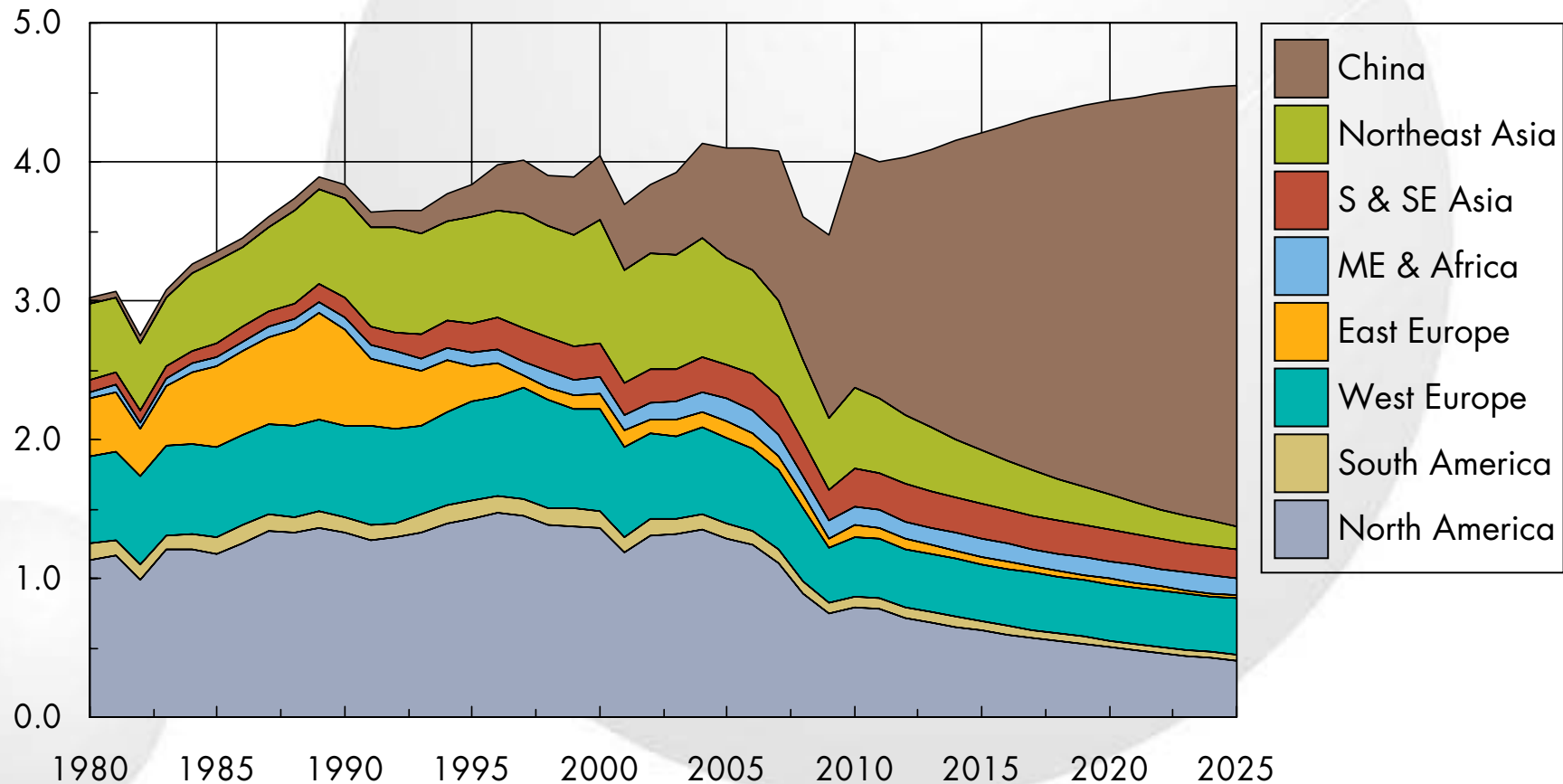


Source: Tecnon OrbiChem

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WORLD POLYAMIDE PRODUCTION

Million Metric Tons

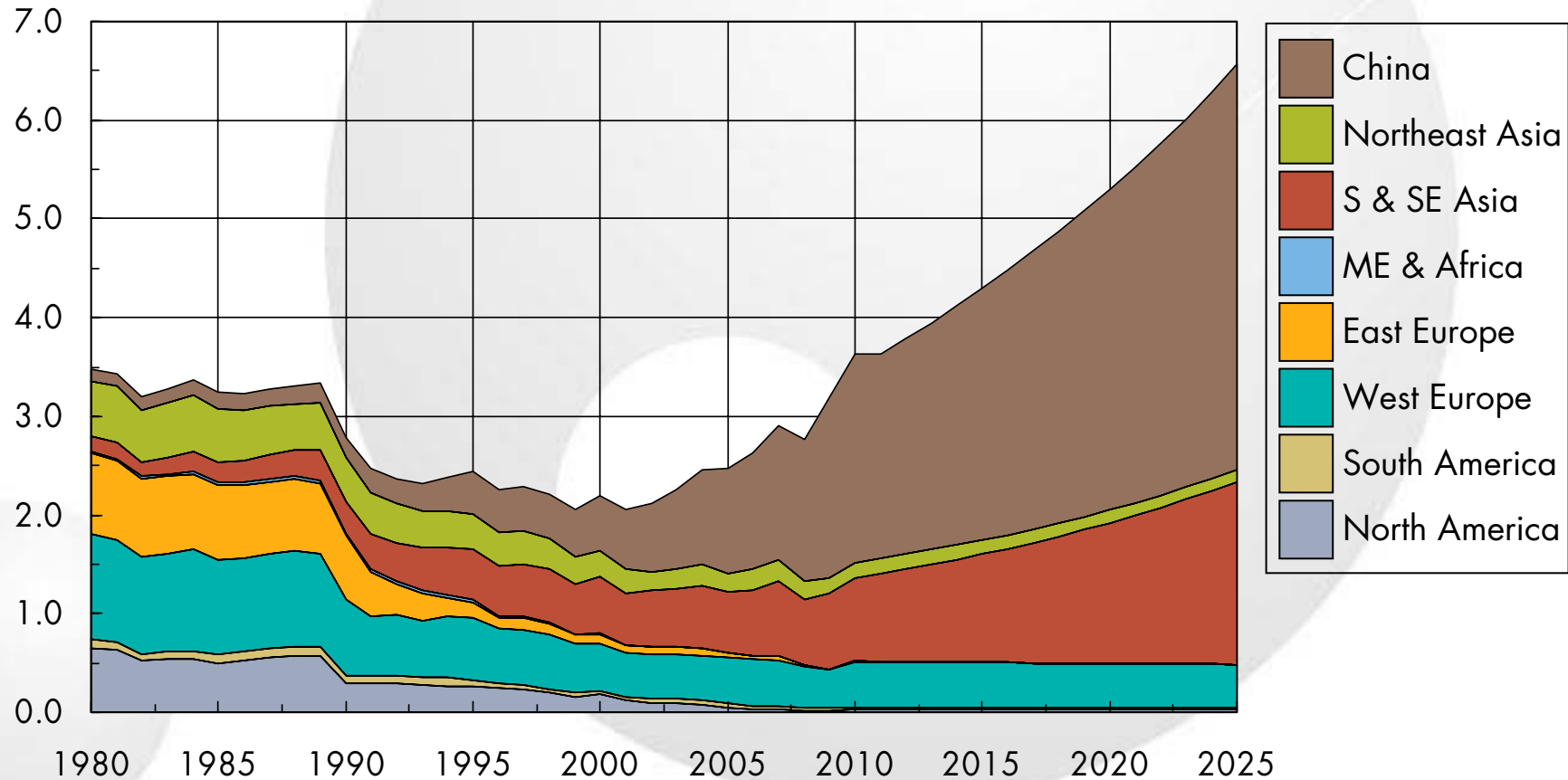


Source: Tecnon OrbiChem

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WORLD CELLULOSIC FIBRE PRODUCTION

Million Metric Tons



Source: Tecnon OrbiChem

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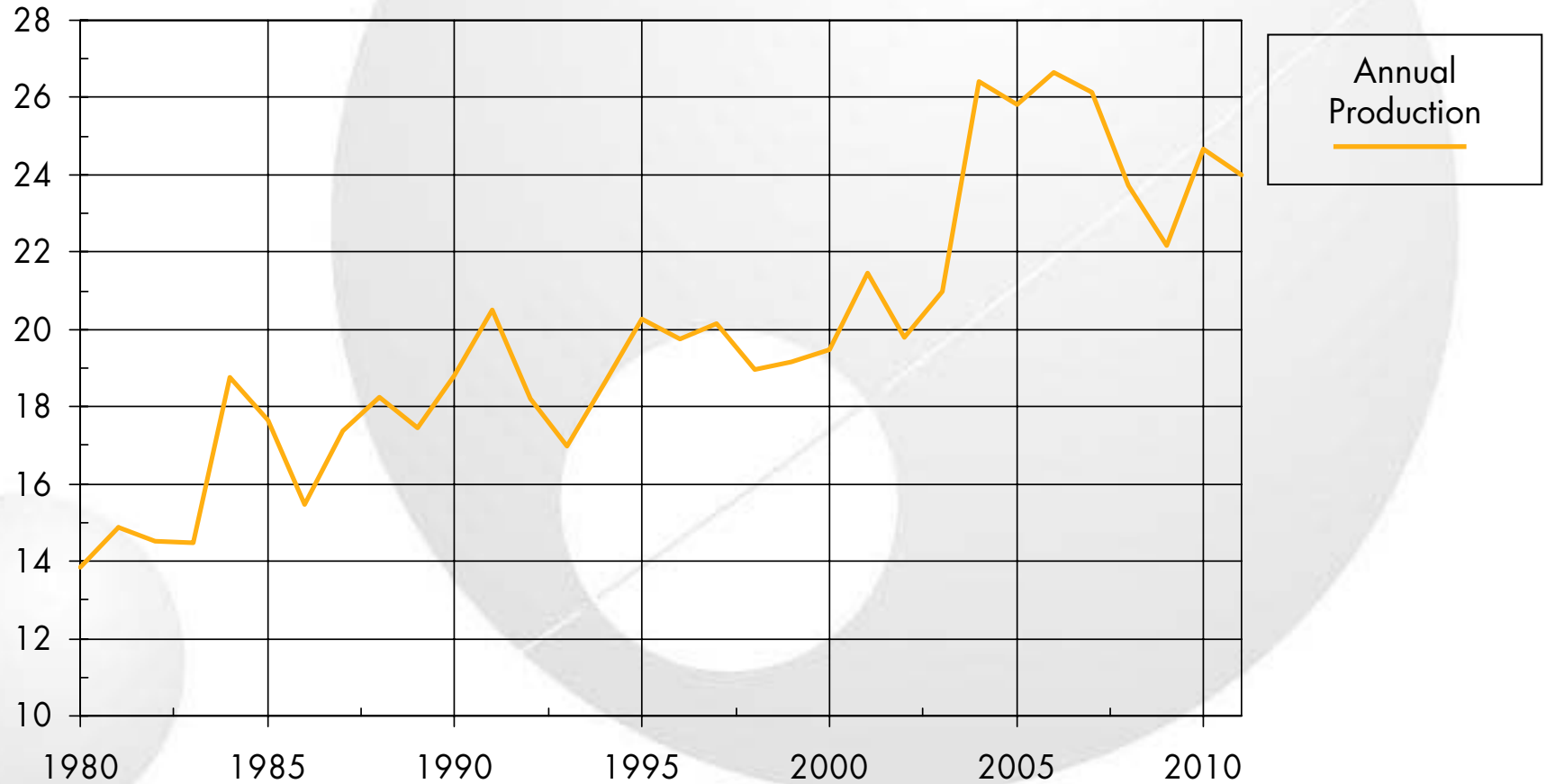
SYNTHETIC FIBRES SUMMARY

- Polyester production is expected to continue growing faster than that of any other synthetic fibre.
- Both acrylic and polypropylene fibre have declined in their share of global production due to higher raw material prices and will continue to be substituted by polyester in the short term and cotton in the longer term .
- Polyamide, substitution of which is largely complete after 40 years, is expected to maintain its position based on technical requirements.
- Production of cellulosic fibres is expected to continue increasing as demand strengthens in both textile and nonwoven applications.
- Bio-based and recycled materials, particularly for polyester, will increase in importance. This is a big advantage over cotton.

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WORLD COTTON PRODUCTION

Million Metric Tons

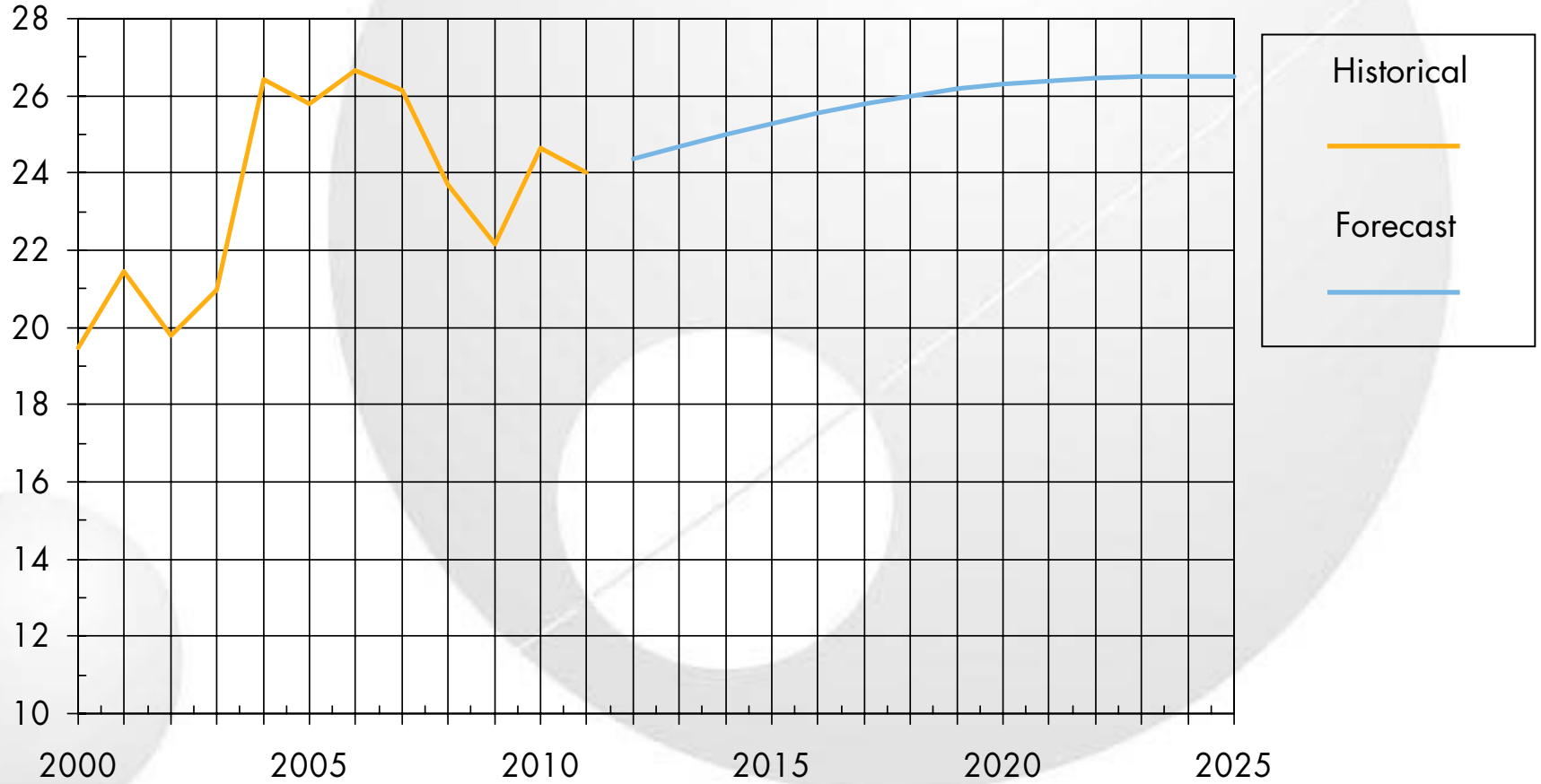


Source: Tecnon OrbiChem

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WORLD COTTON PRODUCTION

Million Metric Tons

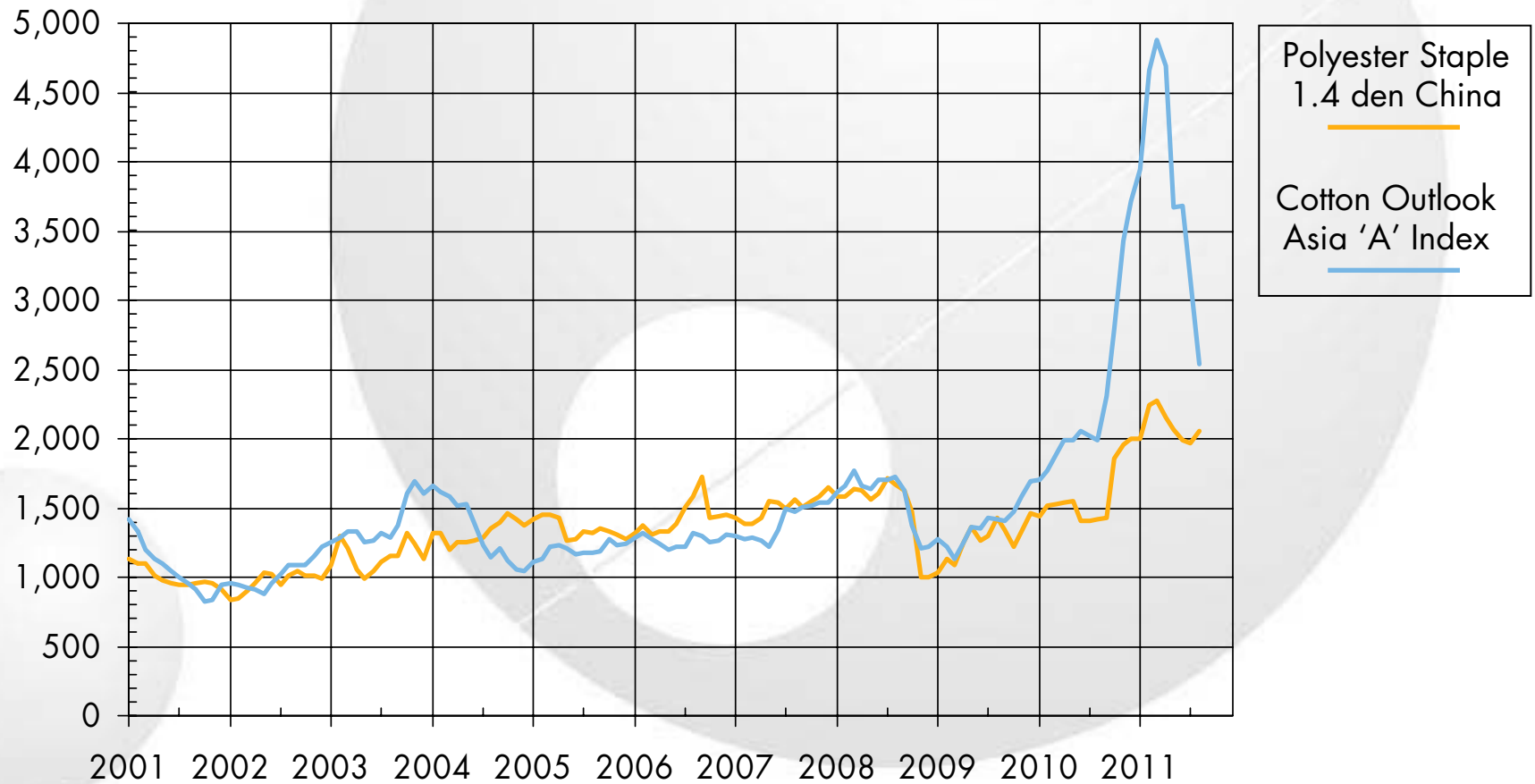


Source: Tecnon OrbiChem

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COTTON vs POLYESTER STAPLE PRICES

Dollars per Ton

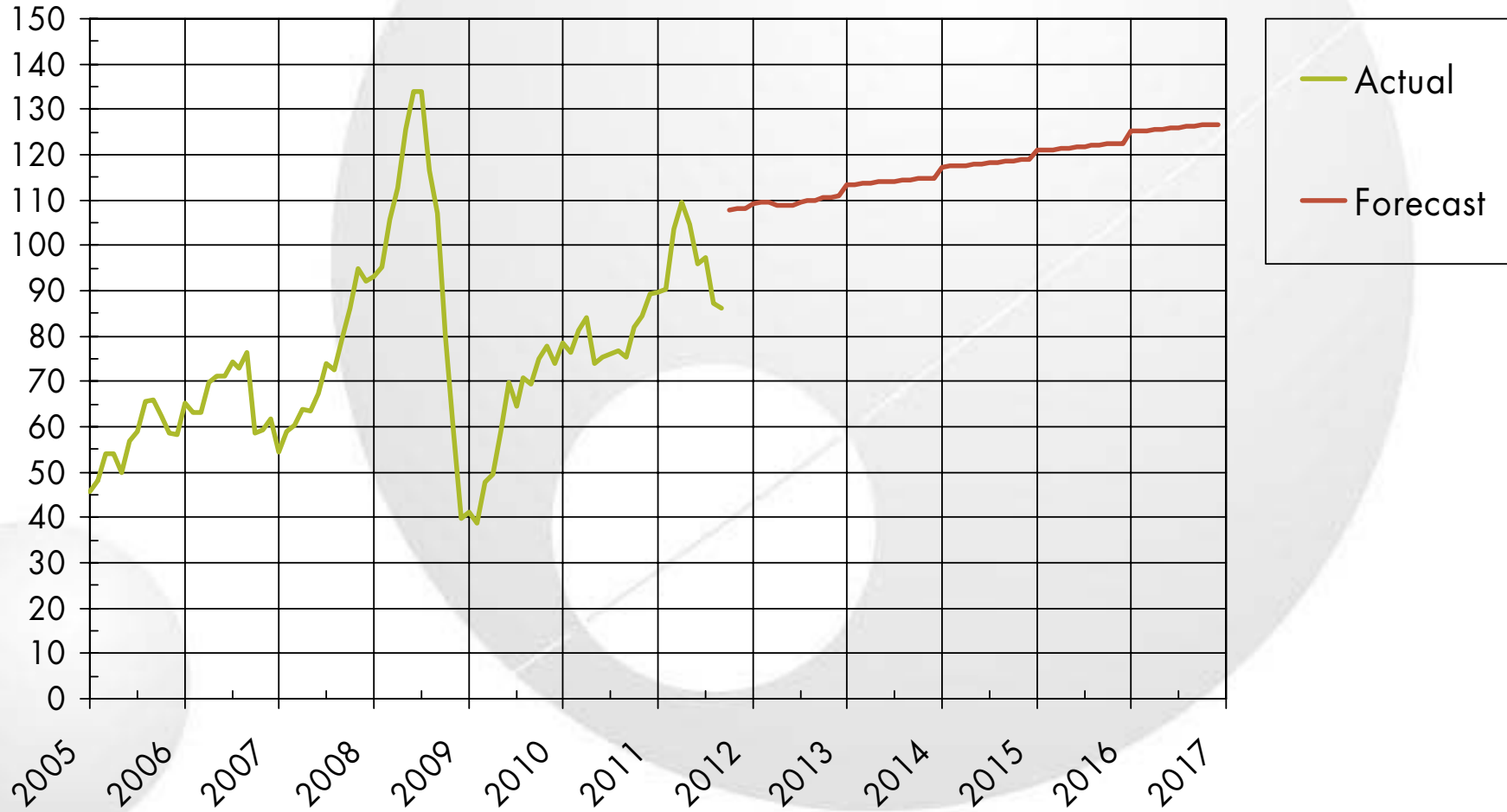


Source: Tecnon OrbiChem & Cotton Outlook

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US DOE WTI CRUDE OIL PRICES

\$/bbl



Source: US Department of Energy

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- Polyester has taken over from cotton as the dominant fibre, but cost and availability still play a significant role in inter-fibre competition.
- High oil prices and abundant cotton reduced demand for synthetic fibres during 2006/7. Cotton prices and demand benefitted.
- Demand and prices for both polyester and cotton suffered during the global economic recession after 2008.
- High cotton prices have underpinned a strong recovery in synthetic fibre markets, especially polyester, from mid-2009.
- An increase in cotton supply and lower cotton prices will slow the growth of polyester in the next few years.
- Rising oil prices will also discourage new investment in polyester production, creating opportunities for cotton as a substitute.

Source: Tecnon OrbiChem

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THEMES TO DEVELOP

- To what extent will polyester recycling help to moderate the average cost of polyester products in relation to higher crude oil prices?
- How quickly will polyester producers move towards plant-based feedstocks?
- Will polyester and cotton eventually compete for scarce agricultural land?



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