

Global Fibres Overview

Synthetic Fibres Raw Materials Committee Meeting at APIC 2014
Pattaya, 16 May 2014

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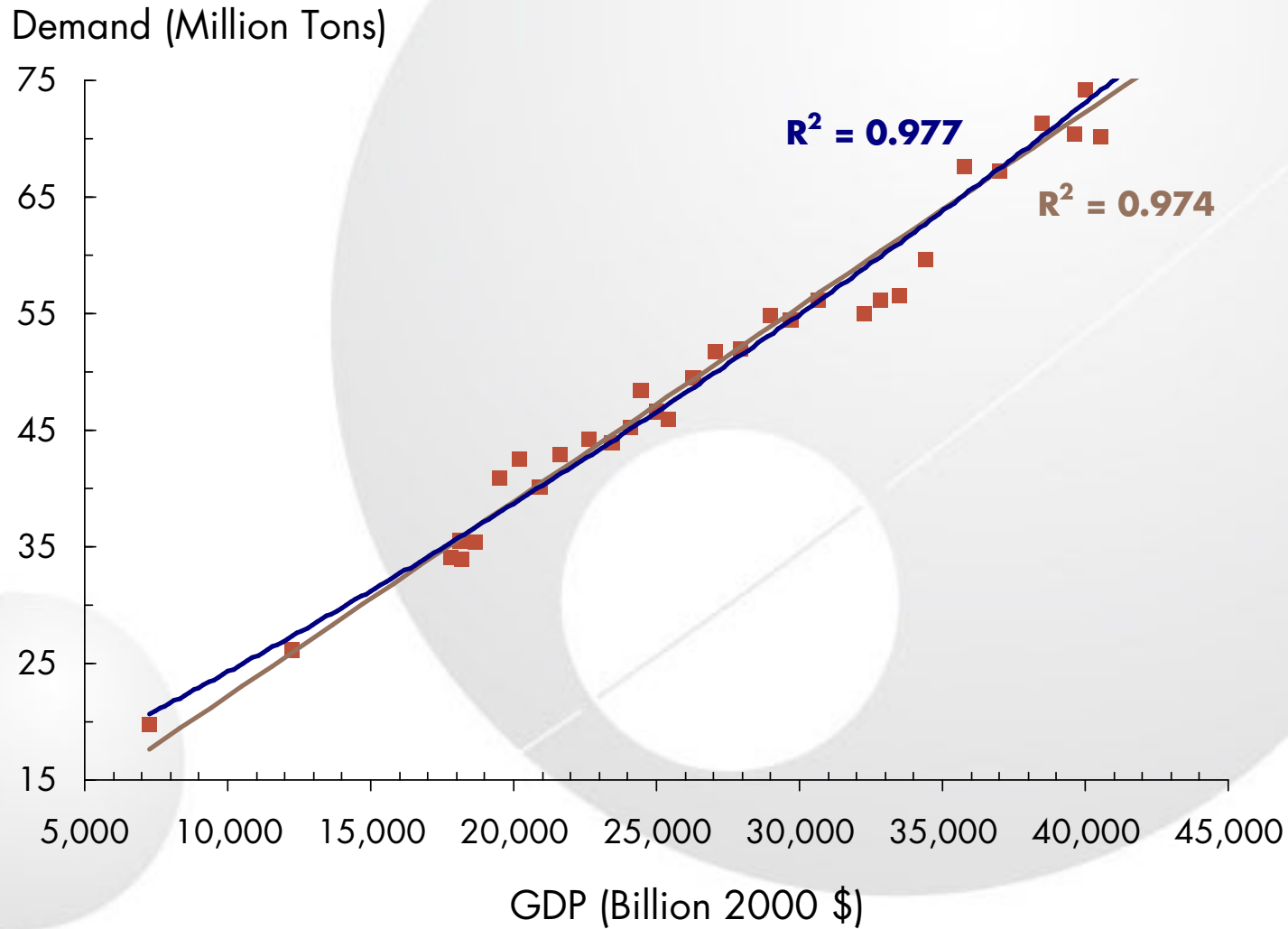


APIC 2014 AGENDA

- Historical and Forecast Man Made Fibre Production
- Cotton Market Trends
- Impact of Polyester Over-Capacity
- Expected Fibre Market Trends
- Conclusions

Source: Tecnon OrbiChem

APIC 2014 WORLD FIBRE DEMAND vs GDP

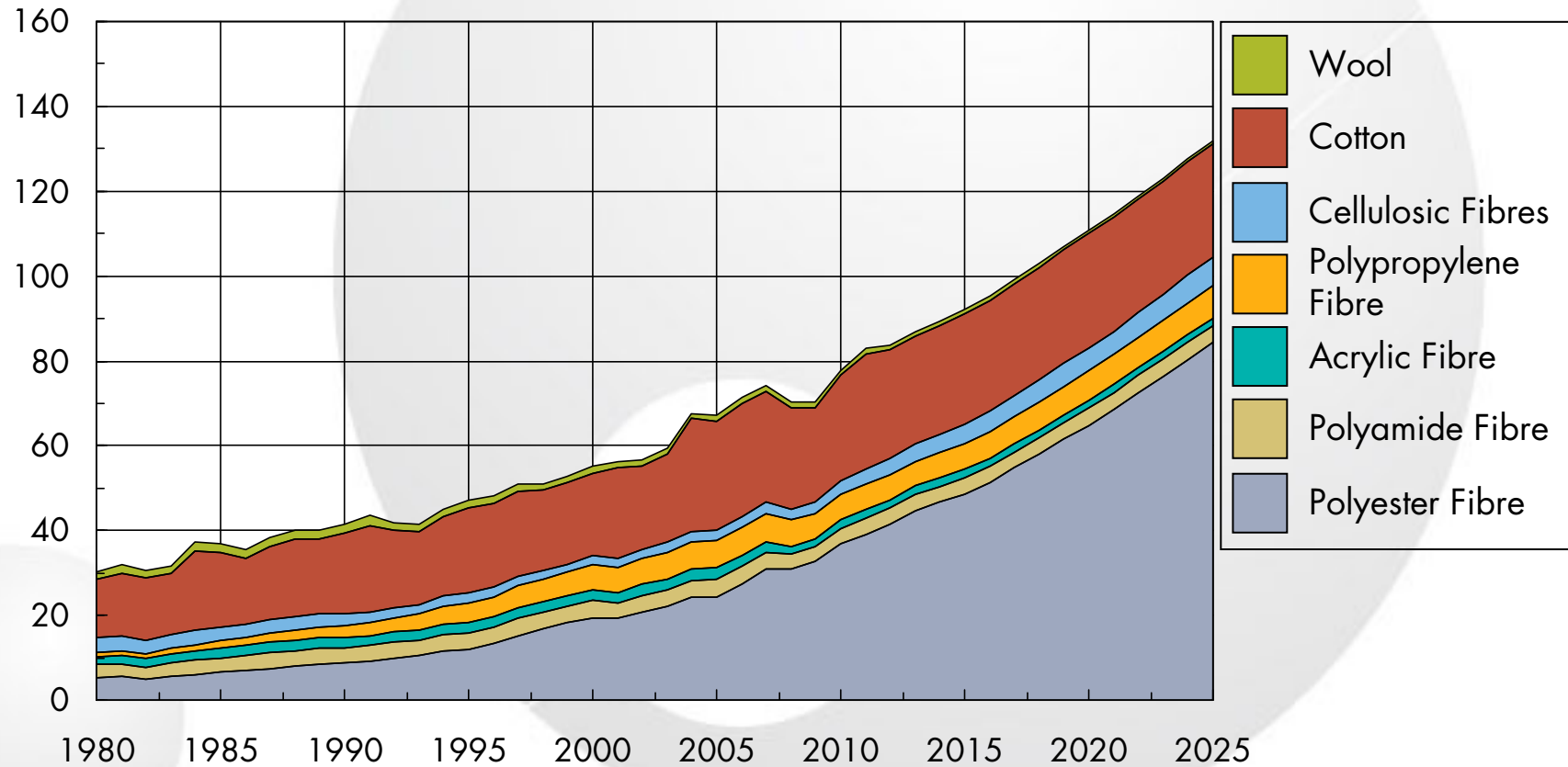


Source: Tecnon OrbiChem

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WORLD FIBRE PRODUCTION 1980-2025

Million Metric Tons



Source: Tecnon OrbiChem

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WORLD FIBRE PRODUCTION TRENDS

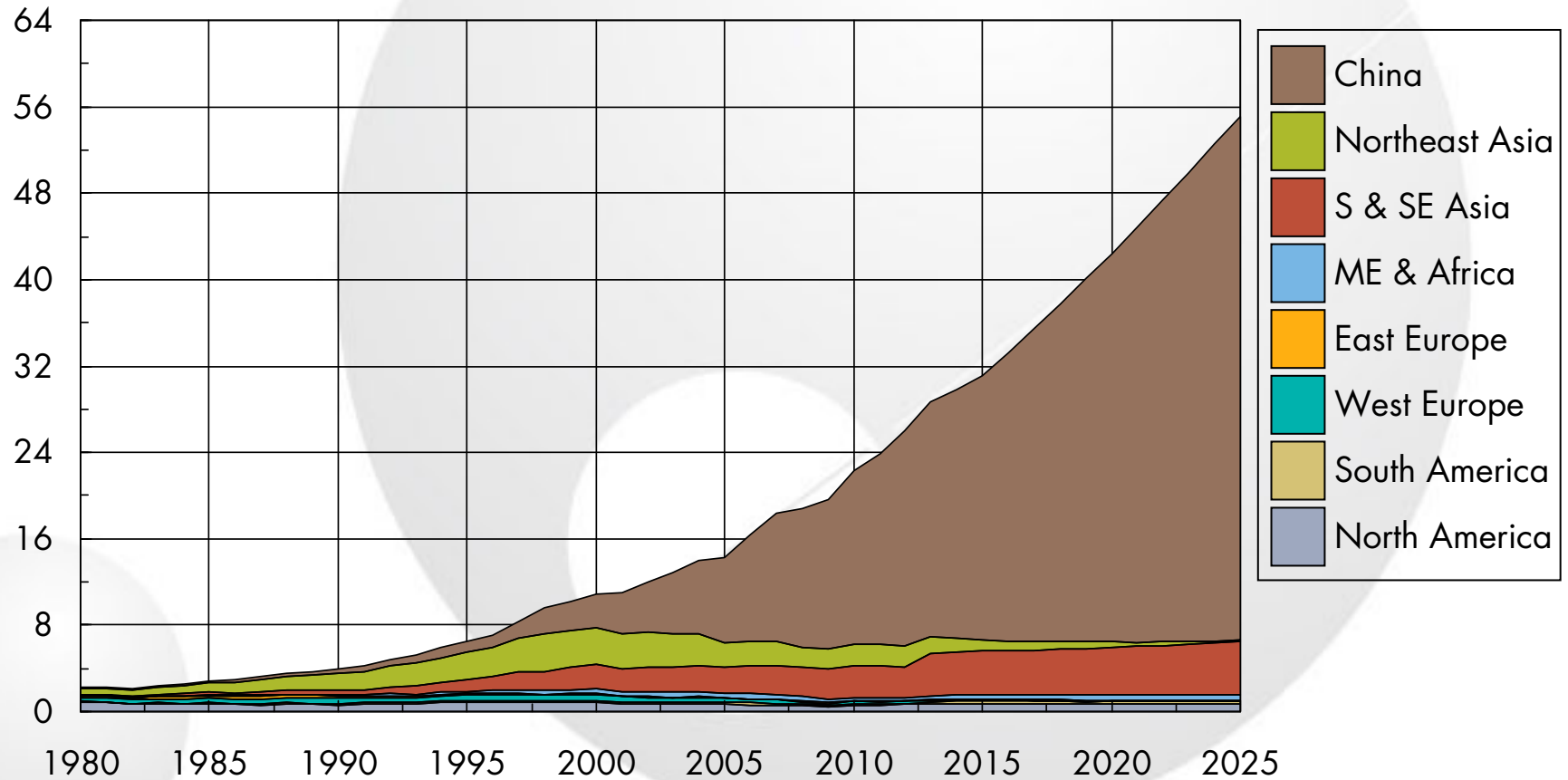
- World fibre production has excellent correlation with GDP which we use as basis for projections to 2025
- Total fibre production expected to grow 3.7% per annum to 2025
- Global 2013 fibre production estimated at 85.5 million tons
- Global 2013 synthetic fibre production estimated at 55.8 million tons (i.e. excluding cotton, cellulosics and wool)
- Global synthetic fibre volume growth is 98%+ of future total fibre production increases
- Polyester (filament and staple) makes up 95%+ of future global synthetic fibre production growth

Source: Tecnon OrbiChem

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WORLD POLYESTER FILAMENT PRODUCTION

Million Metric Tons



Source: Tecnon OrbiChem

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WORLD POLYESTER FILAMENT PRODUCTION TRENDS

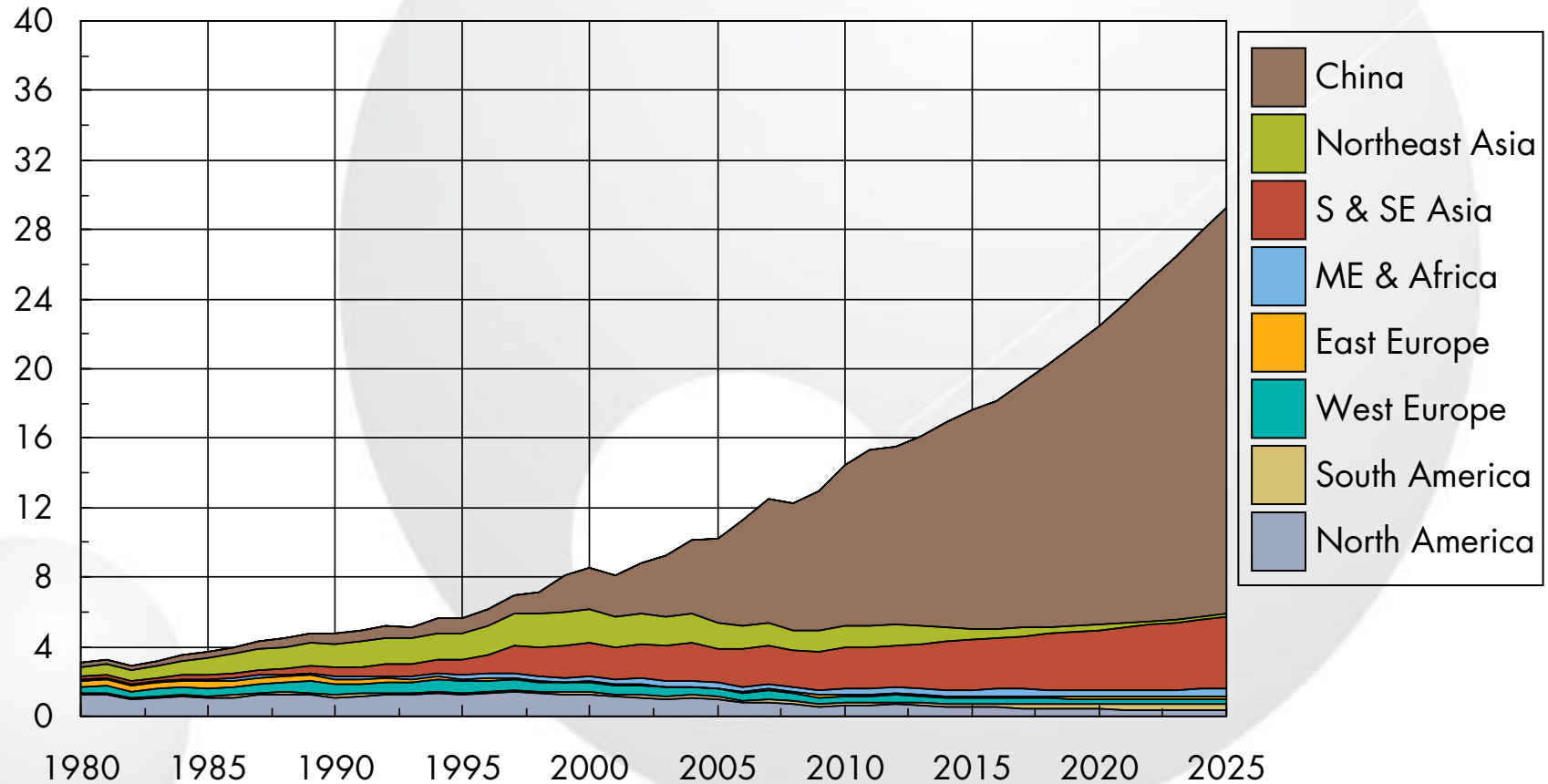
- Polyester filament growth nearly three times the average of all fibres during the last five years (7.9% vs. 3.1%)
- Global 2013 filament production just under 29 million tons (7% growth over 2012)
- Major production increases forecast for China, India and the US
- Production increase in US due to share gains in carpet industry by polyester BCF
- Production decreased in essentially all other developed countries
- Future production growth (through 2025) expected to moderate to 6% per annum (still almost twice all other fibre growth)

Source: Tecnon OrbiChem

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WORLD POLYESTER STAPLE PRODUCTION

Million Metric Tons



Source: Tecnon OrbiChem

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WORLD POLYESTER STAPLE PRODUCTION TRENDS

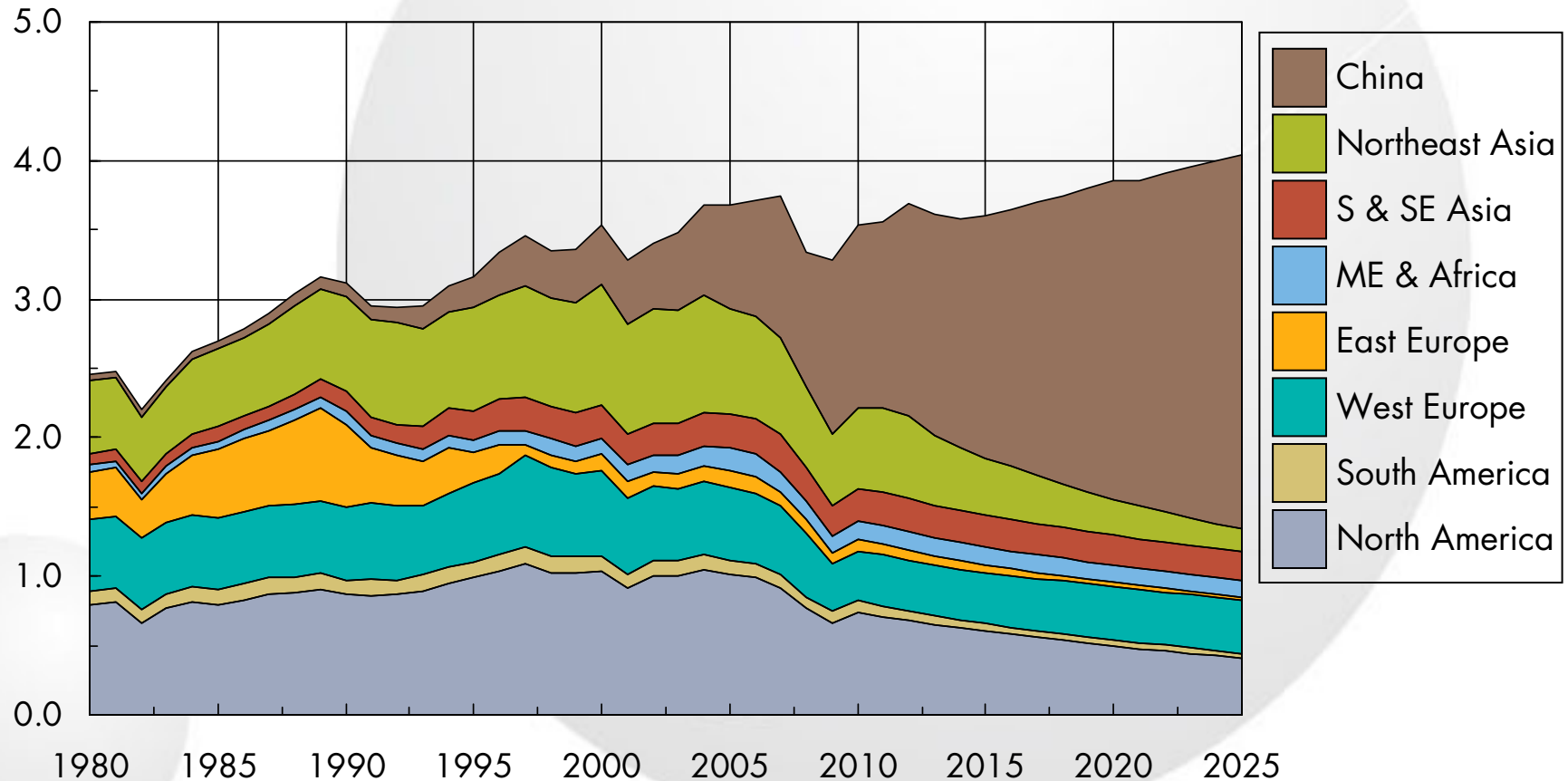
- Global polyester staple production growth during last five years 6.4%
- Production increases in 2012/13 for polyester staple production slowed significantly after above trend growth in 2010/11 due to cotton substitution
- As with polyester filament, China dominates with 65% of global production
- Future production growth 4-5% through 2025 with China and India dominating
- Limited cotton production growth through 2025 will be primary driver for polyester staple

Source: Tecnon OrbiChem

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WORLD POLYAMIDE FILAMENT PRODUCTION

Million Metric Tons



Source: Tecnon OrbiChem



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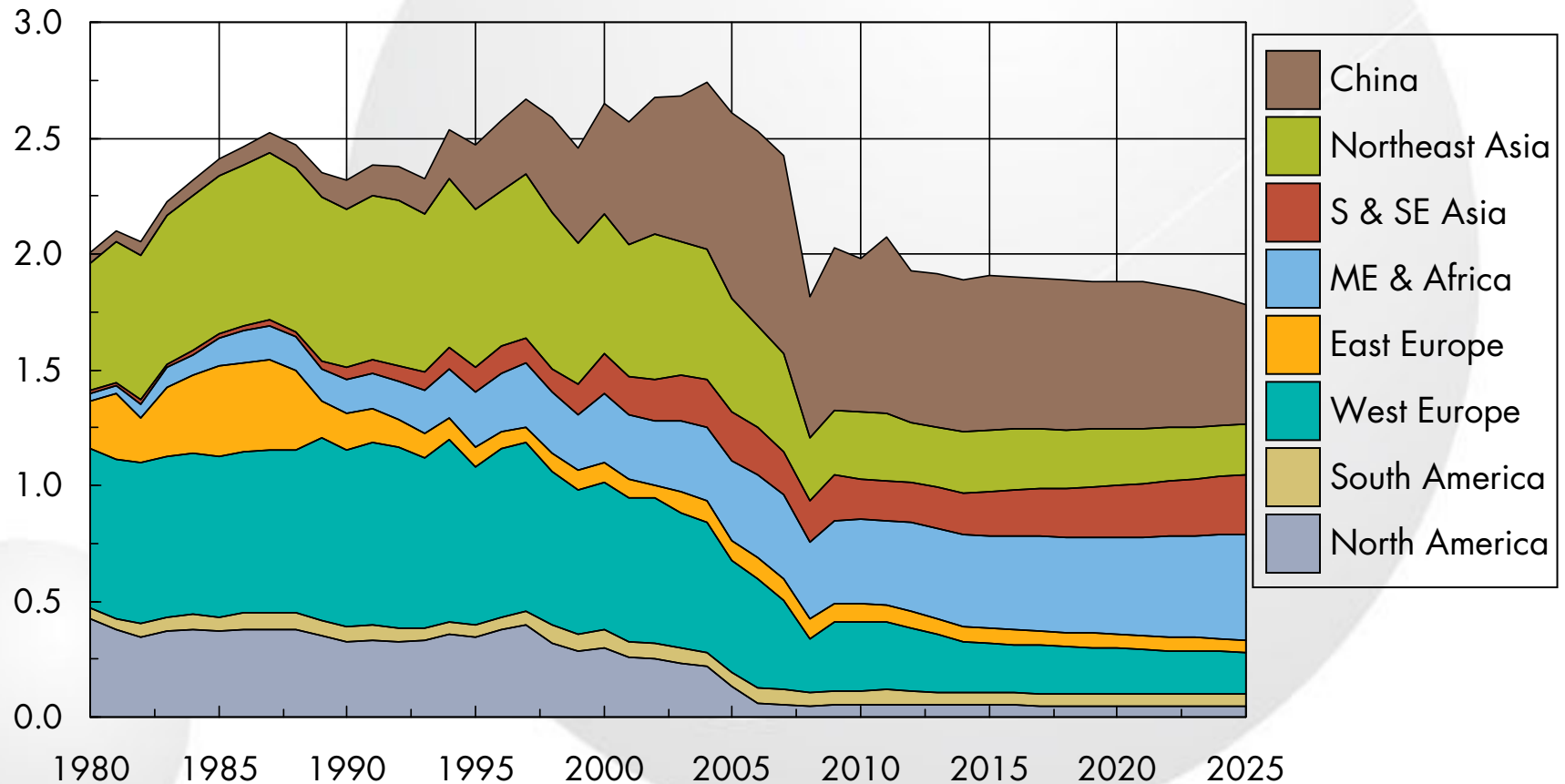
WORLD POLYAMIDE FILAMENT PRODUCTION TRENDS

- Although production growth for polyamide fibre from 2007 to 2012 was flat, sharply higher volumes (~10%) were experienced in 2013, due to textile and industrial growth in China and improved carpet and automotive markets in the US
- Recent increases in polyamide production are expected to moderate to 1-2% per annum growth through 2025, despite 5% growth expected in China
- Future growth limited by additional polyester substitution expected in carpet and some industrial applications including side air-curtains

Source: Tecnon OrbiChem

APIC 2014 WORLD ACRYLIC FIBRE PRODUCTION

Million Metric Tons



Source: Tecnon OrbiChem

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WORLD ACRYLIC FIBRE PRODUCTION TRENDS

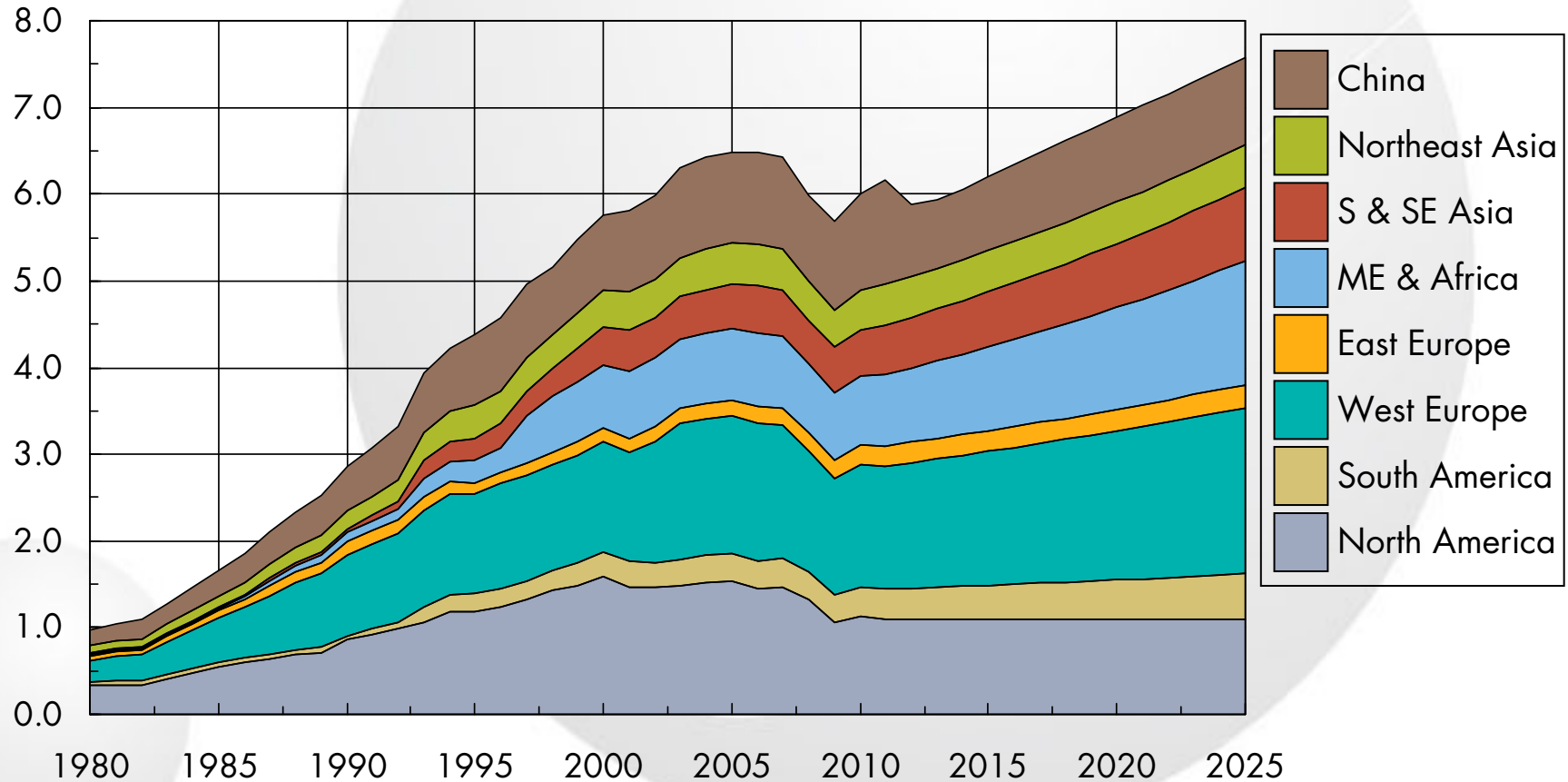
- Global acrylic fibre production has fallen 30% since its high point in 2004
- Production in 2013 (slightly under 2 million tons) was flat compared with 2012
- Acrylic fibre costs continue to suffer from propylene availability and high acrylonitrile conversion costs
- Despite a sharp fall in production over the past 10 years, more modest declines of 1-2% are forecast due to weak supplies of wool and cotton and continuing technical advantages for acrylic fibre in certain markets

Source: Tecnon OrbiChem

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WORLD POLYPROPYLENE FIBRE PRODUCTION

Million Metric Tons



Source: Tecnon OrbiChem



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WORLD POLYPROPYLENE FIBRE PRODUCTION TRENDS

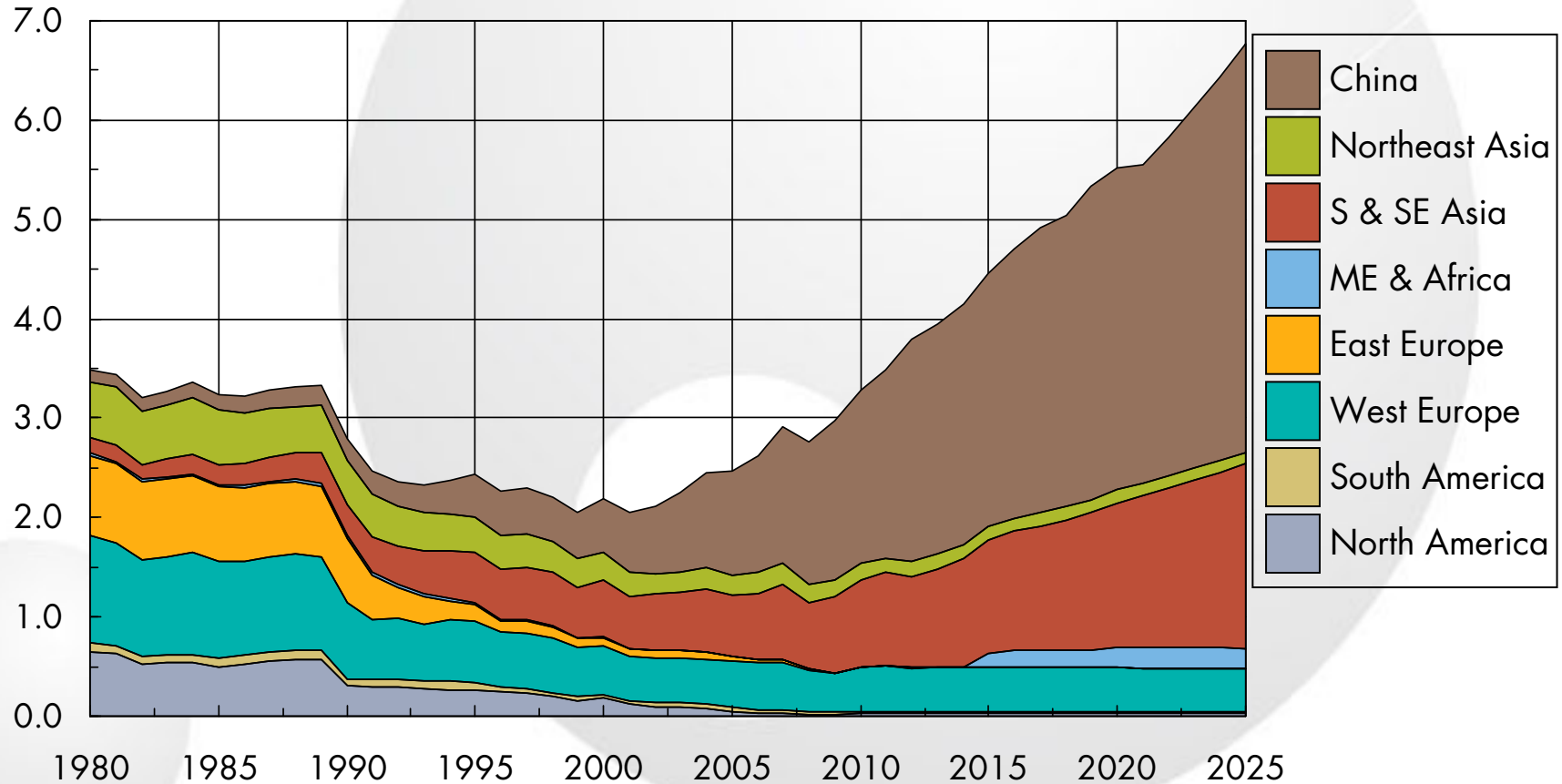
- Global polypropylene fibre production has fallen 1% per annum in the last five years due to volatile propylene costs which has facilitated polyester substitution in some markets
- More stable propylene costs as a result of increased propane dehydrogenation and growing nonwovens' markets are expected to reverse recent trends and result in a 1-2% growth in fibre production growth during forecast period

Source: Tecnon OrbiChem

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WORLD CELLULOSIC FIBRE PRODUCTION

Million Metric Tons



Source: Tecnon OrbiChem



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WORLD CELLULOSIC FIBRE PRODUCTION TRENDS

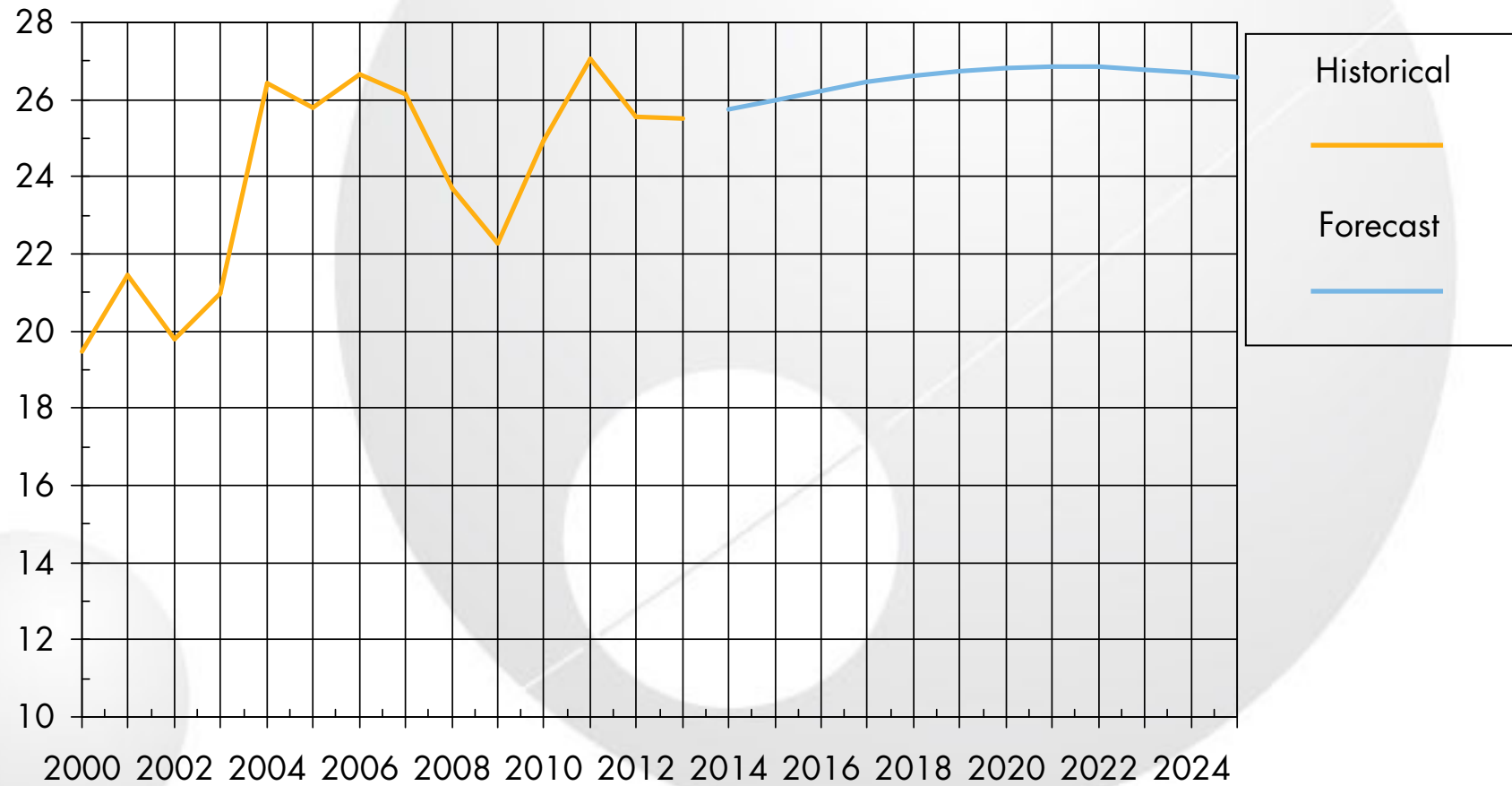
- Global production of cellulosic fibre has grown 5.8% per annum during the previous five years, driven primarily by China
- 2013 production increased to 4 million ton (5.5% above 2012)
- Projected growth of 5% per annum is expected for the forecast period, due to strong production growth in China and Southeast Asia as cellulosic fibre substitutes for cotton and new market opportunities, particularly in nonwovens, are developed

Source: Tecnon OrbiChem

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WORLD COTTON PRODUCTION

Million Metric Tons

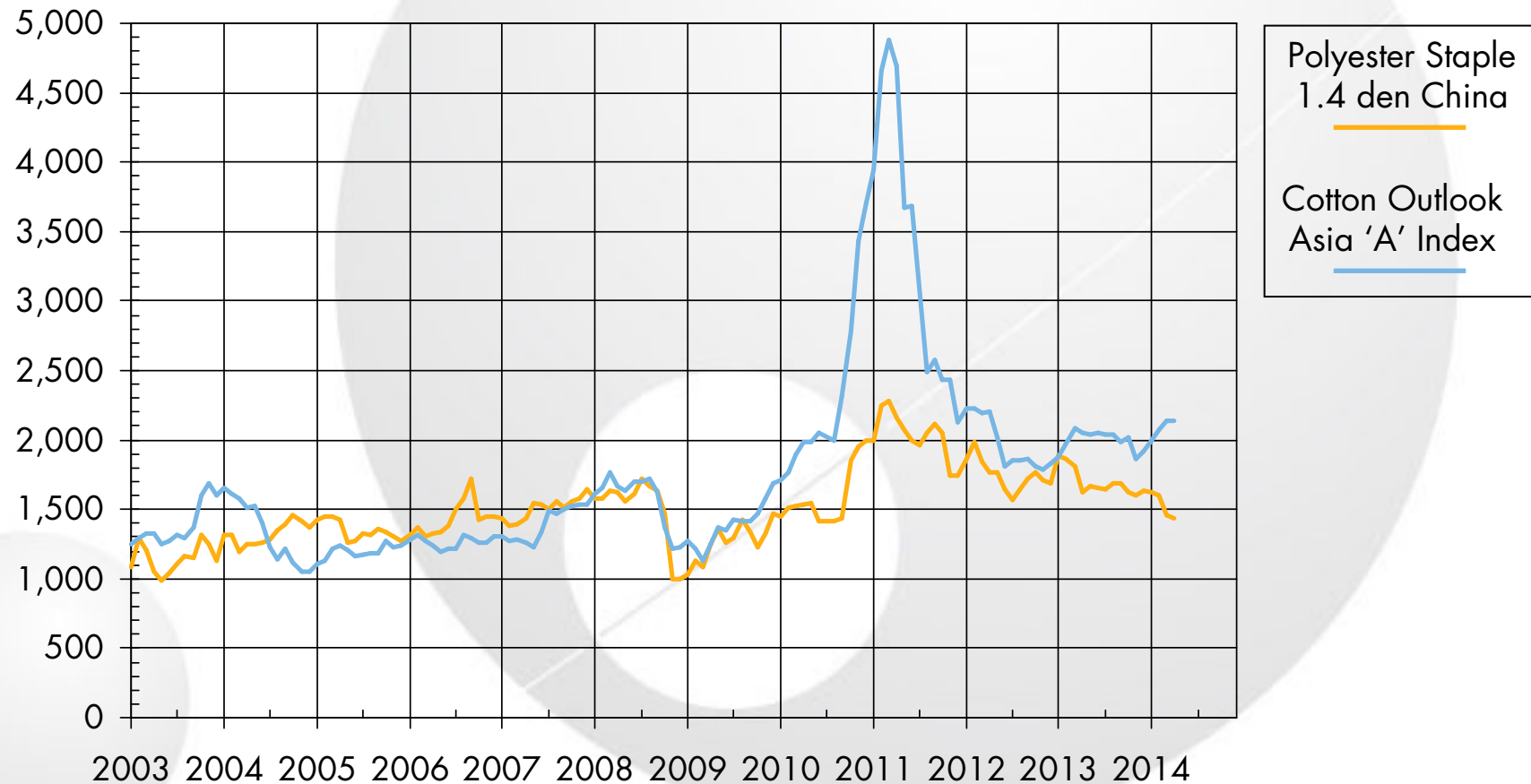


Source: ICAC

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COTTON vs POLYESTER STAPLE PRICES

Dollars per Ton



Source: Tecnon OrbiChem & Cotton Outlook

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COTTON TRENDS

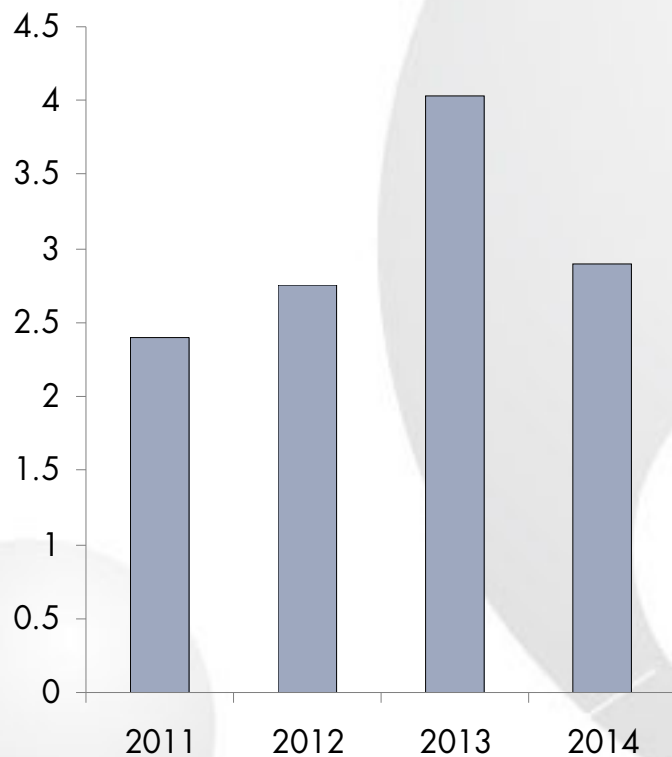
- Cotton production has limited upside due to competition for land and water resources and limited potential for yield improvement
- Cotton production in 2012/13 season was 26 million tons and is expected to remain in the 25-27 million ton range for forecast period
- Cotton price volatility pushed retailers and brand houses to polyester substitution in the past 2-3 years
- Limited production growth and higher costs are expected to put upwards on pressure cotton prices in the longer term
- China's state policy of stockpiling cotton has changed and is being replaced by direct subsidies to farmers
- Management of Chinese state reserves of cotton will play a significant role in prices over the next year or two

Source: Tecnon OrbiChem

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NEW CHINESE POLYESTER FIBRE CAPACITY 2011-2014

Effective Capacity Increment,
Million Metric Tons



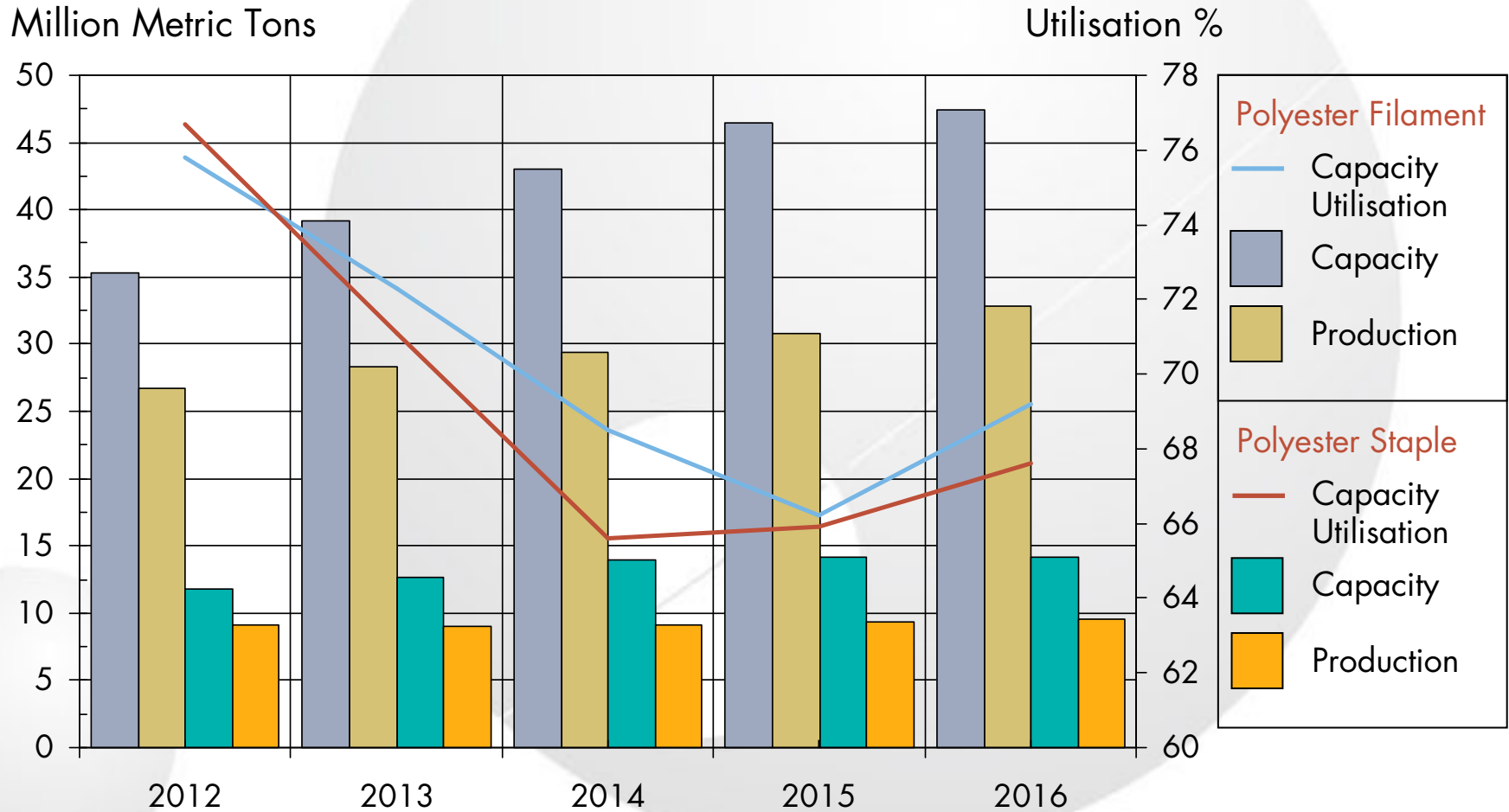
<i>Producer</i>	<i>Capacity (1,000 ktpa)</i>	<i>Start-Up 2014</i>	<i>Product</i>
Zhejiang Guxiandao	500	Mar	PIY
Tongkun	400	Q2	PFY
Zhejiang Xinfengming	400	Q2	PFY
Jiangsu Shenghong	250	Q2	PFY
Sanfangxiang	200	Q2	PFY
Zhejiang Hongjian	200	H2	PFY
Fujian Jinxing	200	H2	PFY
Jiangsu Zhangjiagang Xinxin	180	H2	PFY
Zhejiang Huaxin	400	H2	PFY
Jiangsu Haixin	500	H2	PFY
Hebei Baoyi	200	Q4	PFY
Fujian Changle Shanli	200	Q3	PSF
Fujian Jinxing	200	Q3	PSF

Nameplate Capacity Total 3,830

Source: Tecnon OrbiChem

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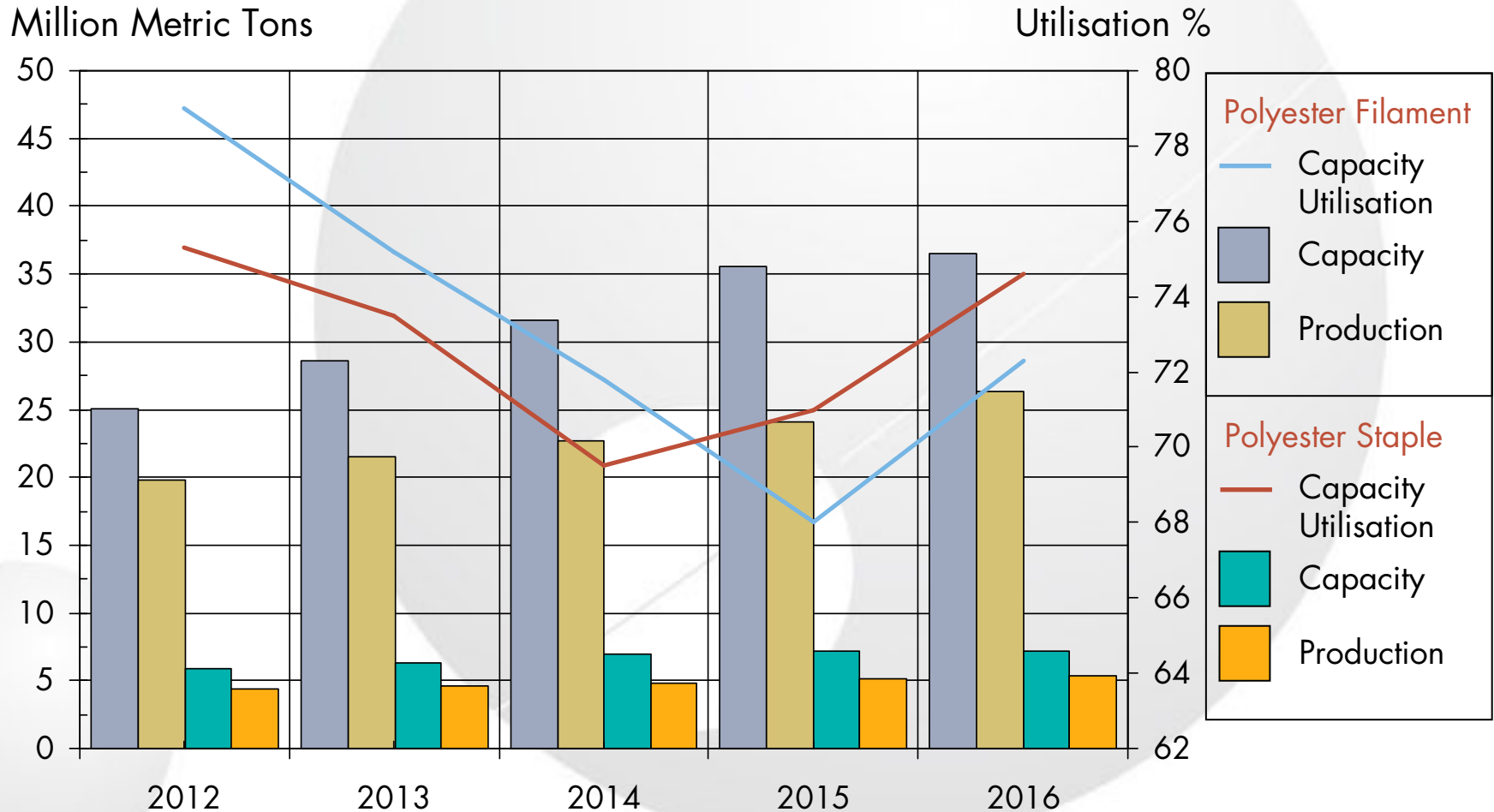
WORLD POLYESTER OVERCAPACITY (Virgin Only)



Source: Tecnon OrbiChem

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CHINESE POLYESTER OVERCAPACITY (Virgin Only)



Source: Tecnon OrbiChem

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THE IMPACT OF POLYESTER OVERCAPACITY

- Polyester overcapacity (fibre and intermediates) for the next five years indicates limited opportunity for margin improvement in the polyester chain, regardless of end-use demand
- Decreasing margins with limited upside will continue to improve polyester's competitive position compared to other fibres
- Despite slower overall fibre growth, continuing gains in market share for polyester translate to steady or only modestly slower growth for polyester fibre during the forecast period

Source: Tecnon OrbiChem

APIC 2014 EXPECTED FIBRE MARKET TRENDS

<i>Market</i>	<i>Trending To...</i>	<i>Share Reduction</i>
Carpets	Polyester Filament	Polyamide and Polypropylene Filament
Nonwovens	Cellulosic and Polypropylene Staple	Cotton
Apparel	Polyester and Cellulosic Filament and Staple	Cotton
Air Bags (Side Curtains)	Polyester Filament	Polyamide Filament
Tailored Clothing	Polyester	Wool

Source: Tecnon OrbiChem

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CONCLUSIONS

- Overall fibre production growth slows in forecast period
- Limited cotton growth has dramatic impact on synthetic fibre markets
- Polyester domination in fibre markets accelerates as overcapacity limits margin expansion throughout the chain
- Despite growing cost advantages, polyester is technically limited in some markets allowing more modest growth in polyamide, polypropylene and cellulosic fibre, coupled with modest declines in acrylic and cotton production

Source: Tecnon OrbiChem



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