# Man Made Fibers Review

CANAINTEX Sept 2016

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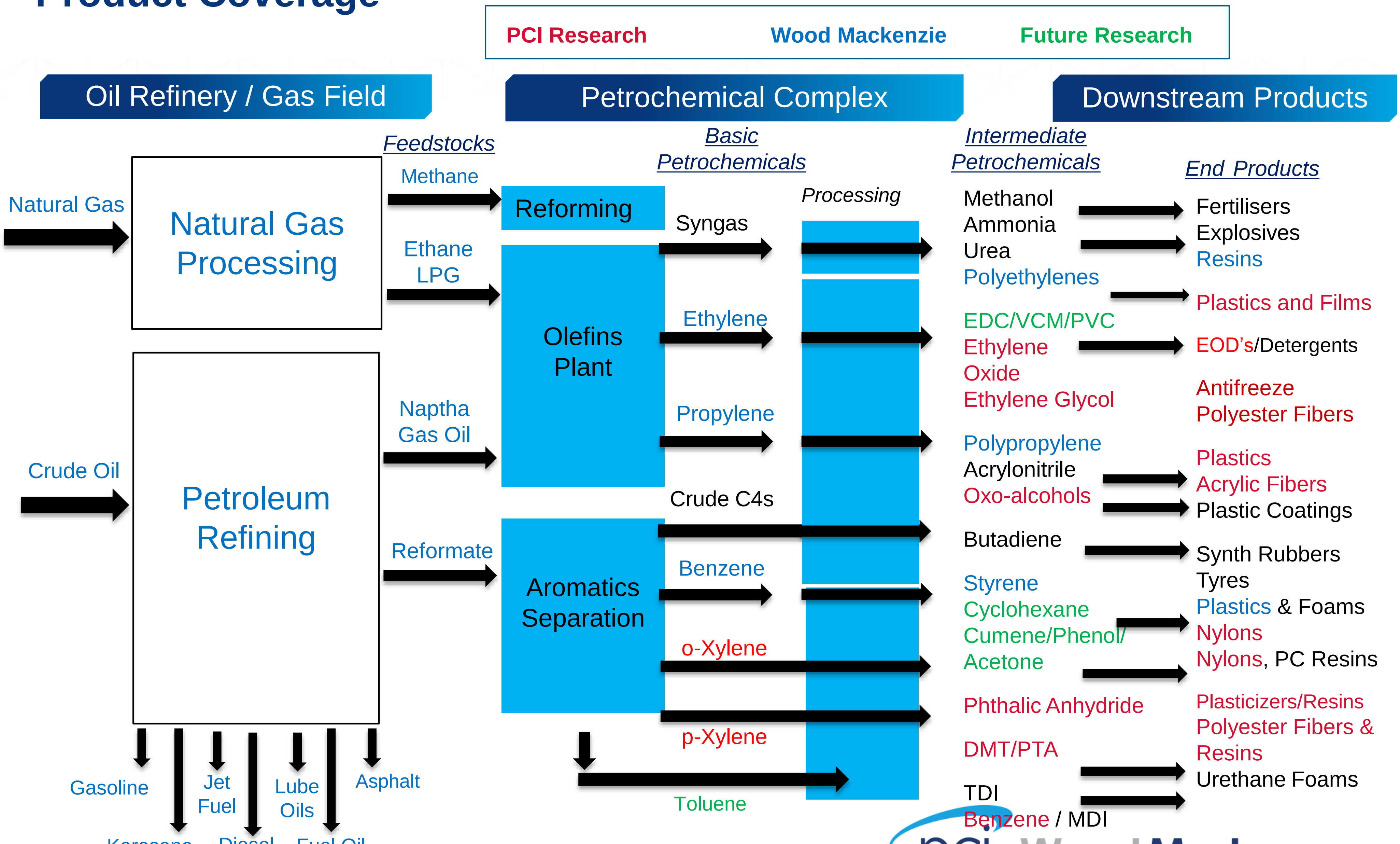
# Agenda

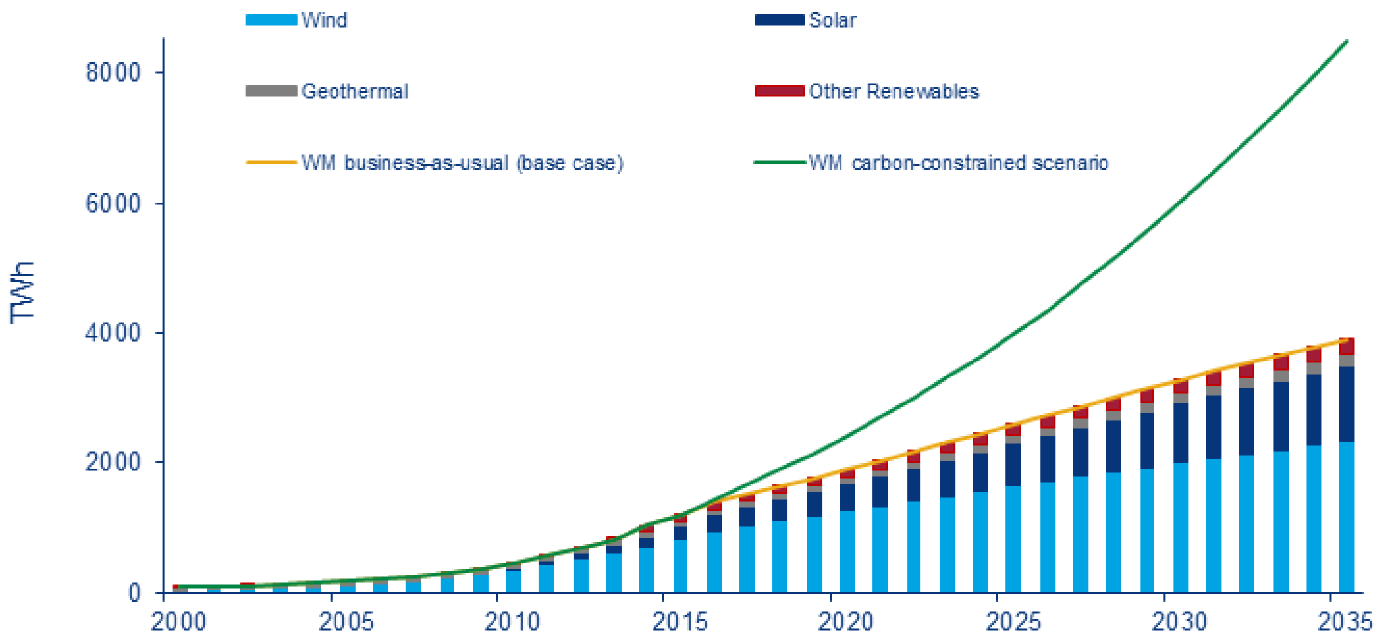
1. Introduction
2. The Fibers Big Picture
3. Polyester Continued Growth
4. Nylon, Spandex & Rayon Markets
5. Current China Developments
6. NAFTA Markets
7. Drivers of Price

# Product Coverage



# Renewable Energy – Greentech Media will become part of Wood Mackenzie

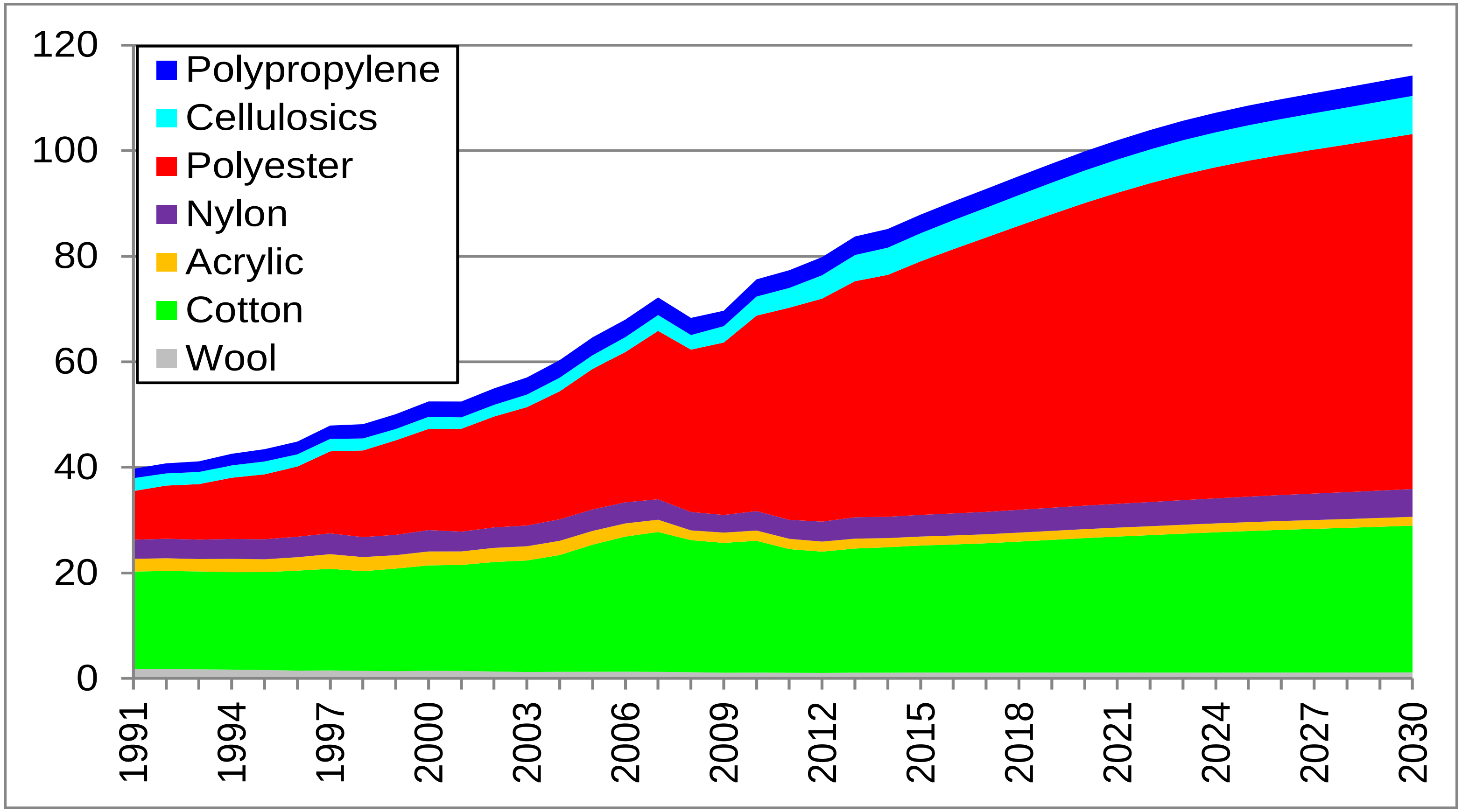
Renewables: Global Power Output



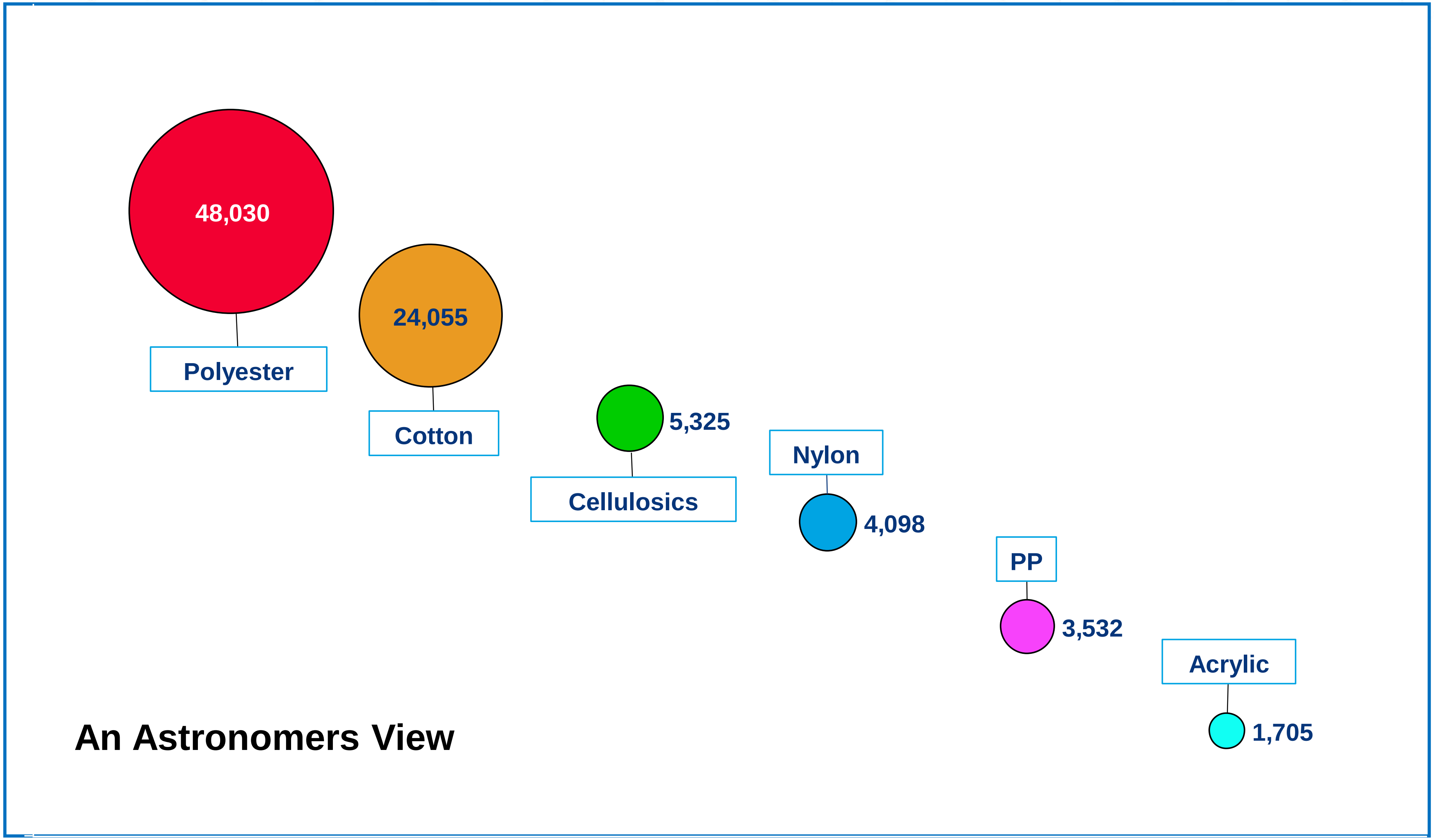

Source: Wood Mackenzie

**Greentech Media is an industry leading information services provider for the next generation electricity and renewables sector.**

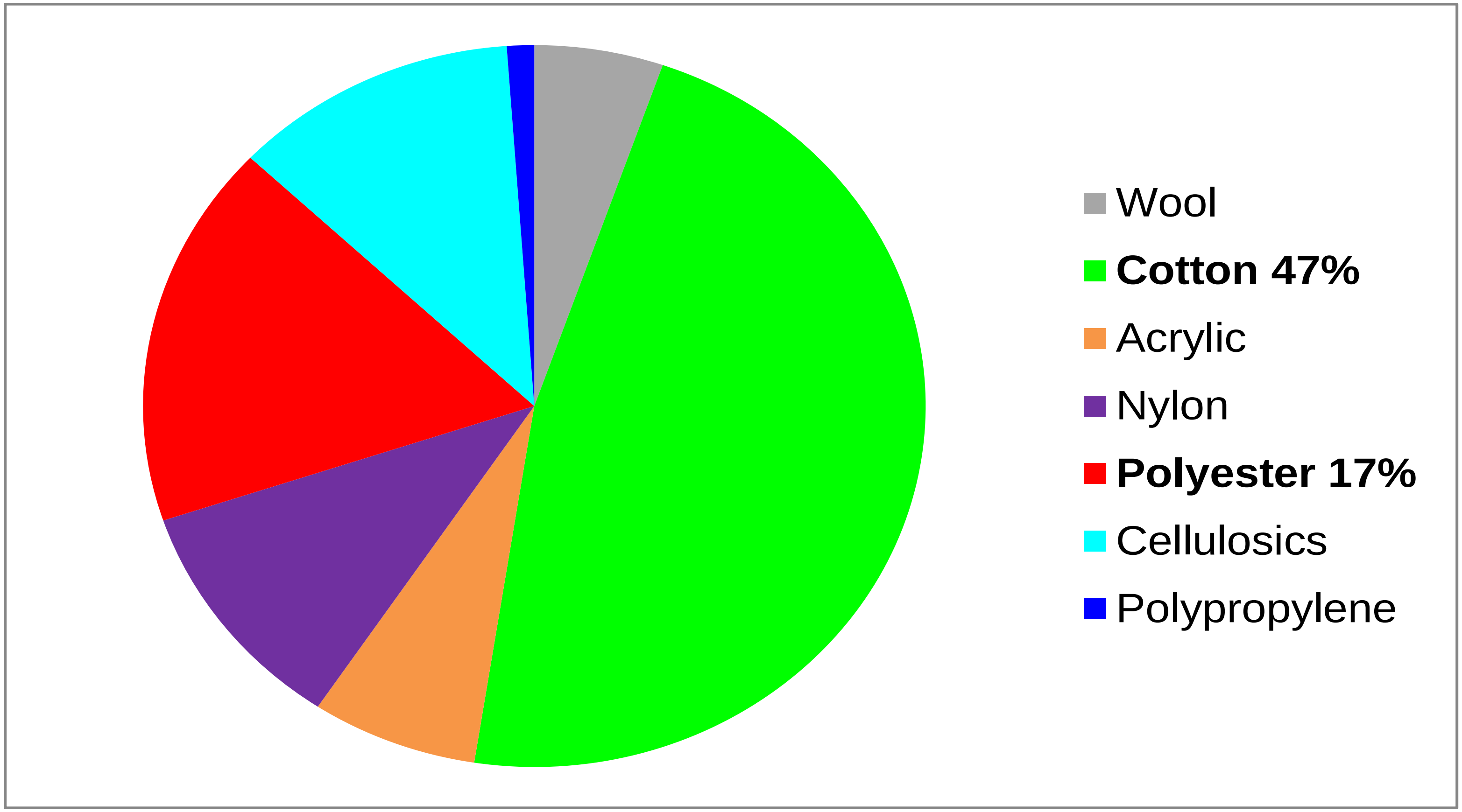
# Textile Mill Consumption (million tonnes)



# Fibres in context 2015 (ktes)



# Global Mill Consumption - 1980




**1980 = 30.3 million tons**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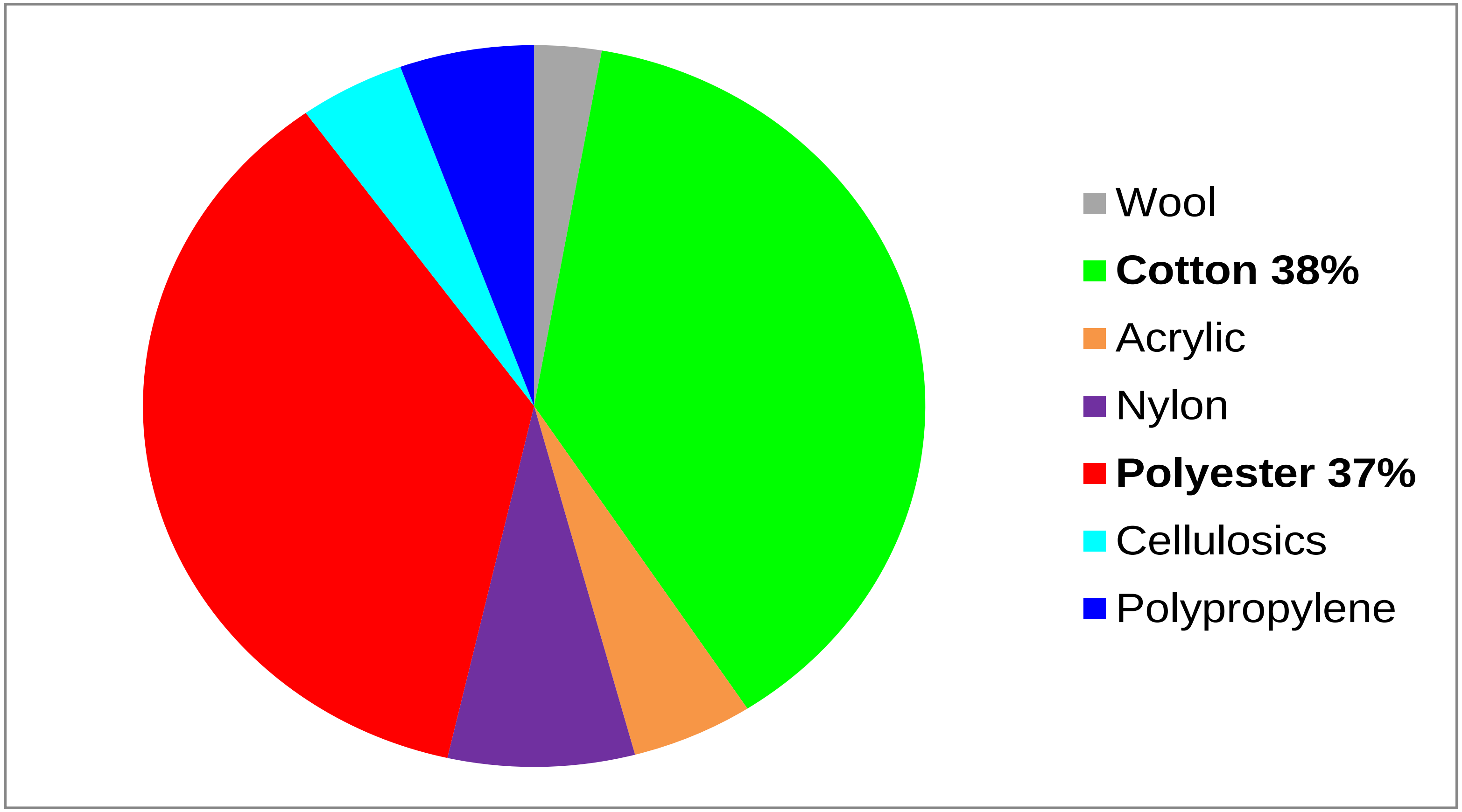
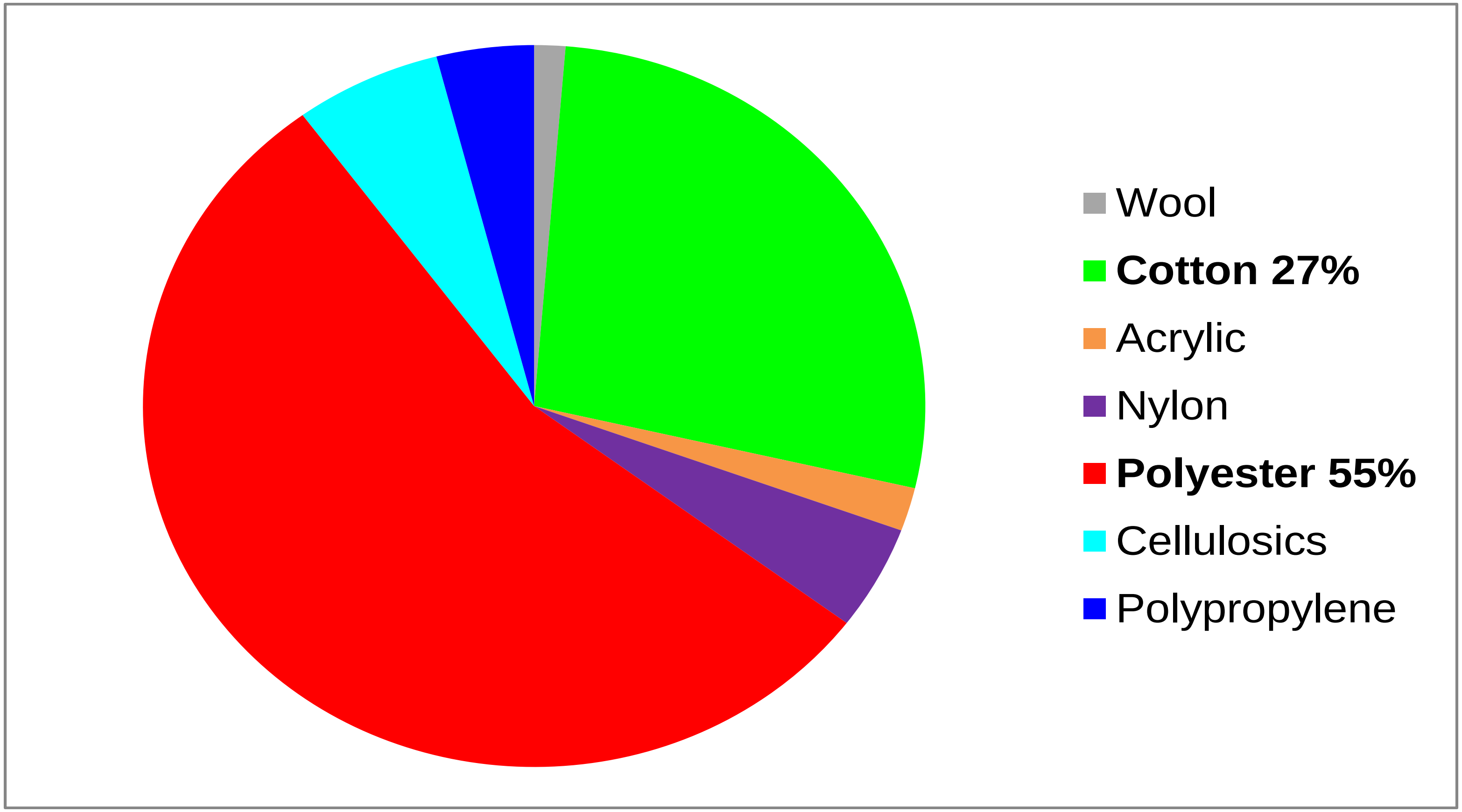
# Global Mill Consumption - 2000



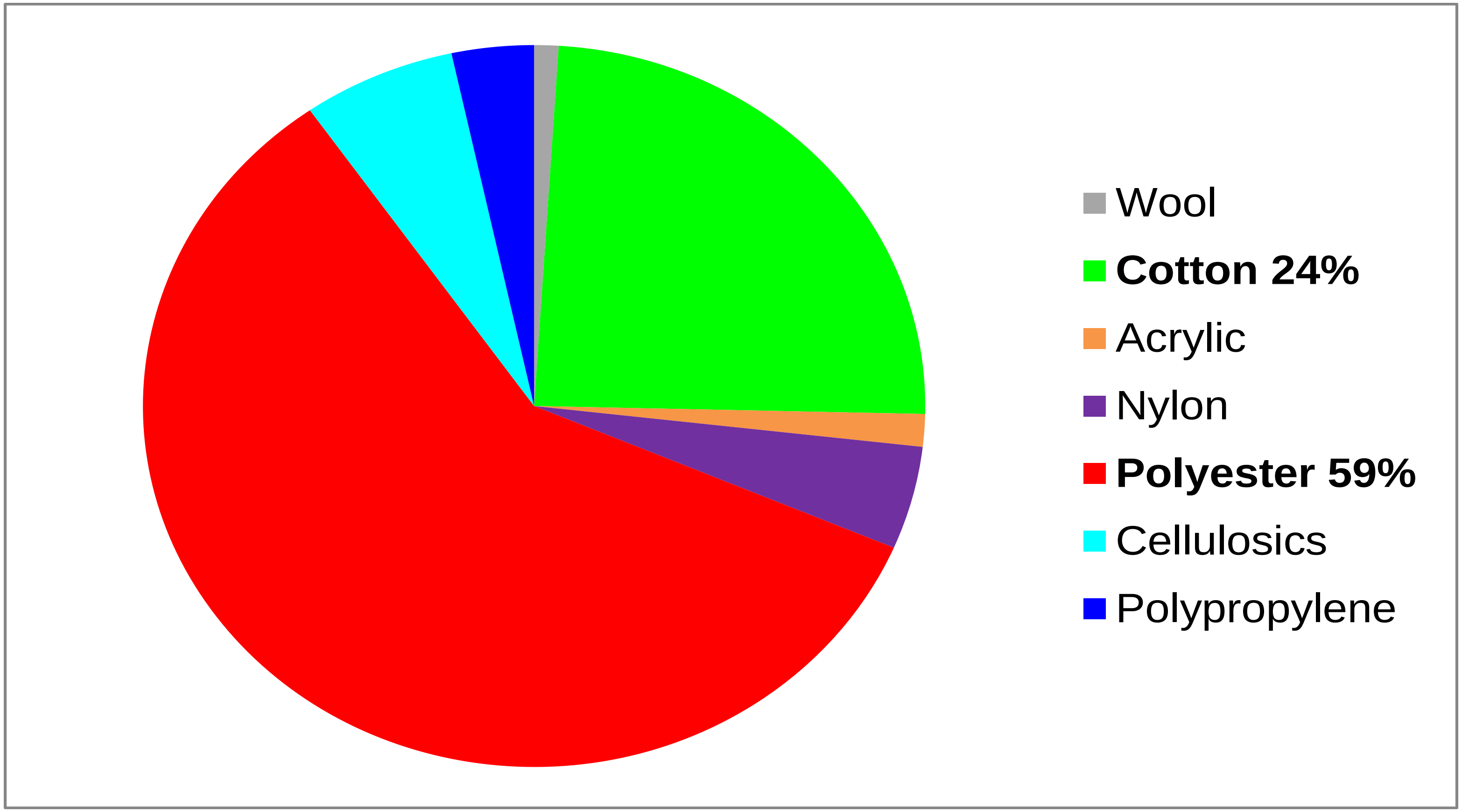

**2000 = 52.5 million tons**

# Global Mill Consumption - 2015



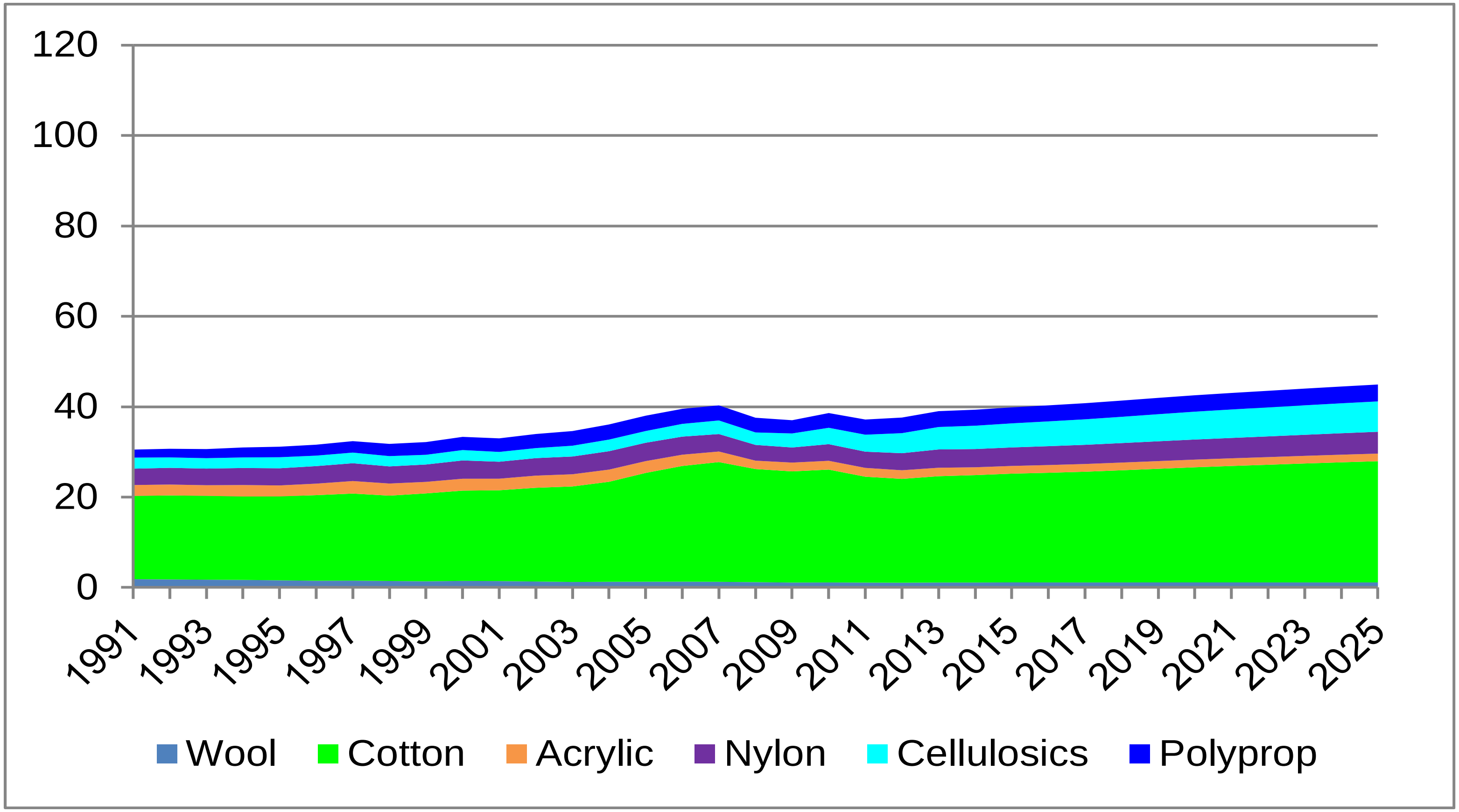

**2015 = 87.8 million tons**

# Global Mill Consumption - 2030

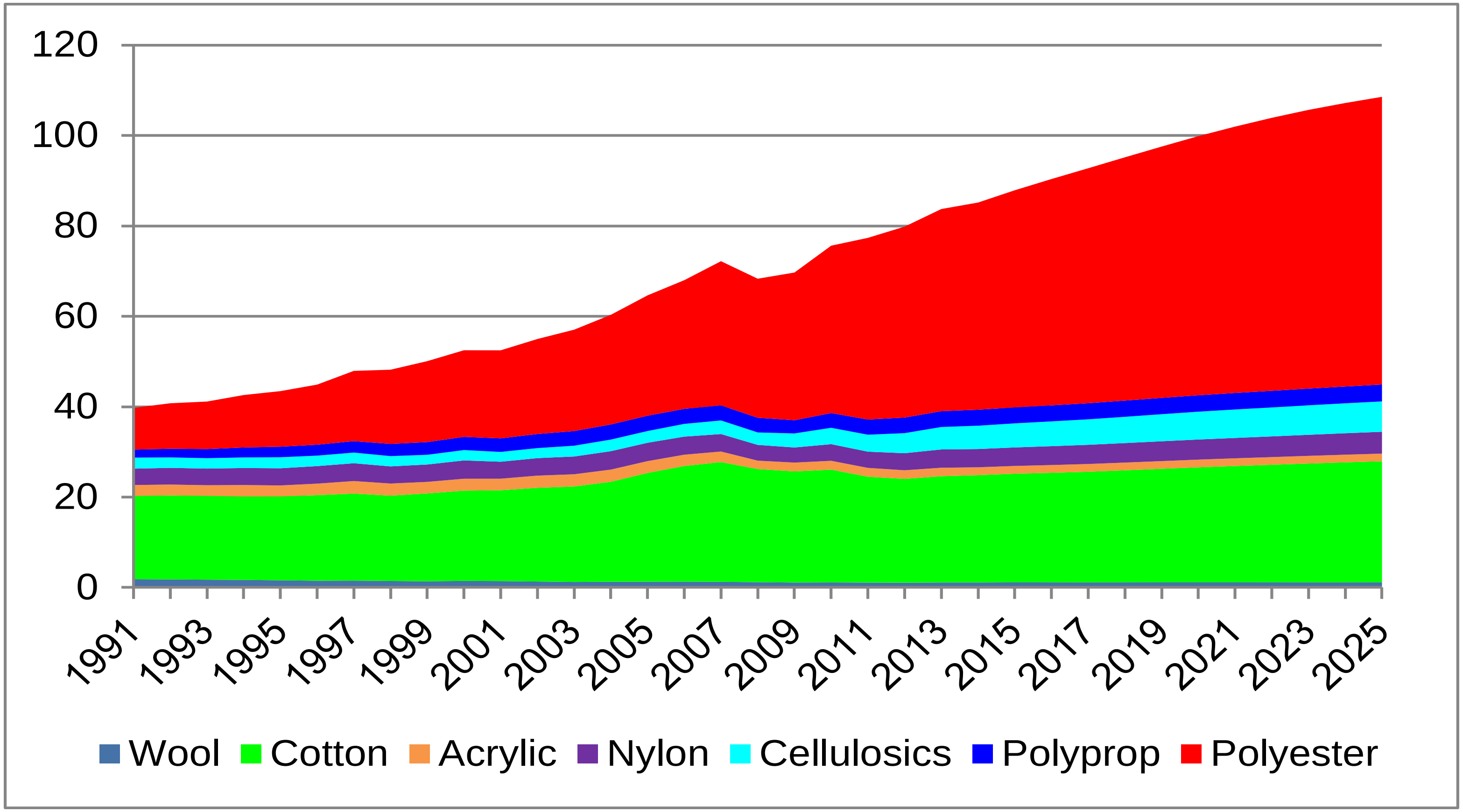



**2030 = 114.2 million tons**

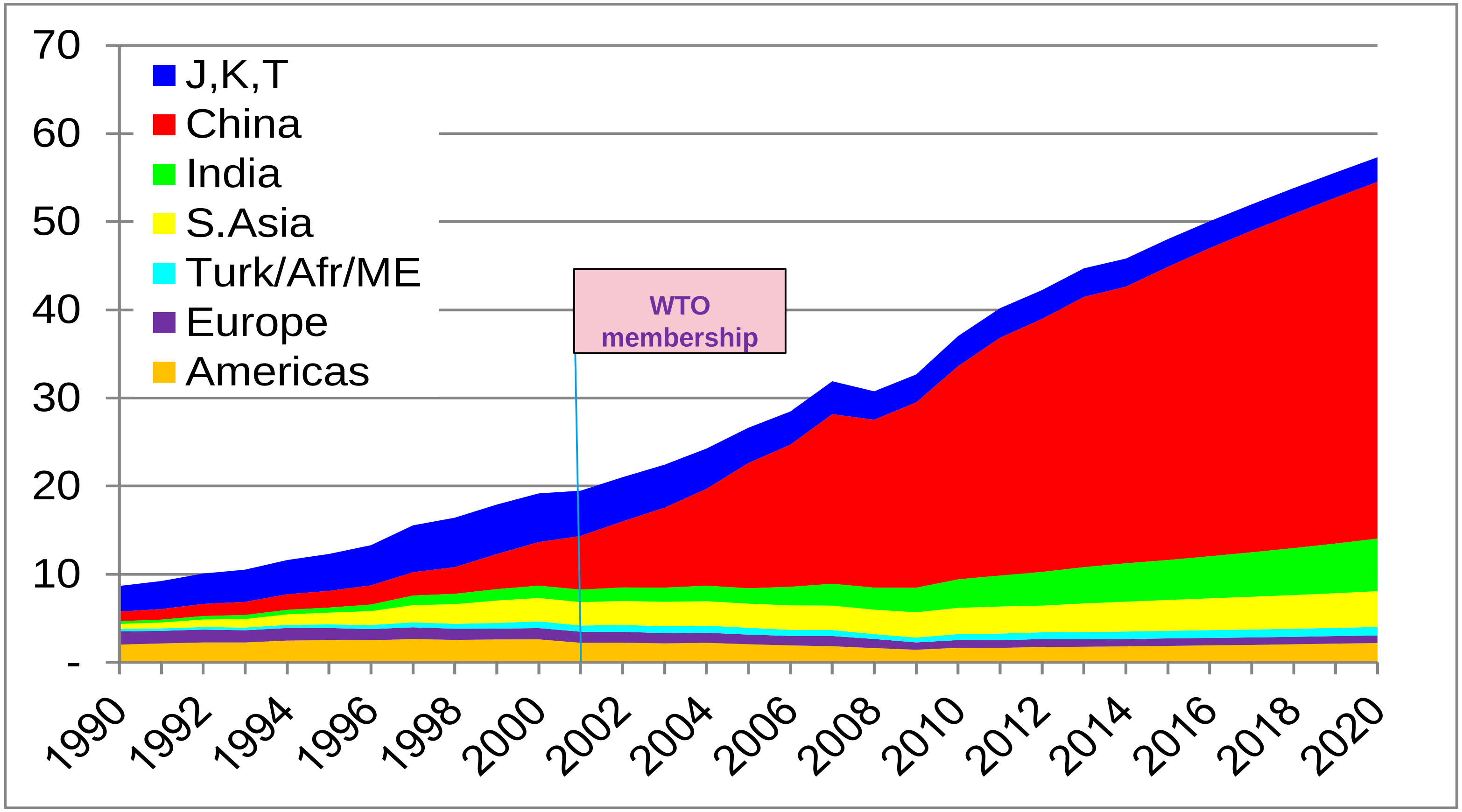
# All Fibers excluding Polyester grow 47% from 1991 – 2025 (million tons)



# All Fibers including Polyester grow 173% from 1991 – 2025 (million tons)



# China's Dominance of Polyester Production (million tons)




**China share of production: 1990 = 13%; 2000 = 26%; 2010 = 65%; 2015 = 69%**



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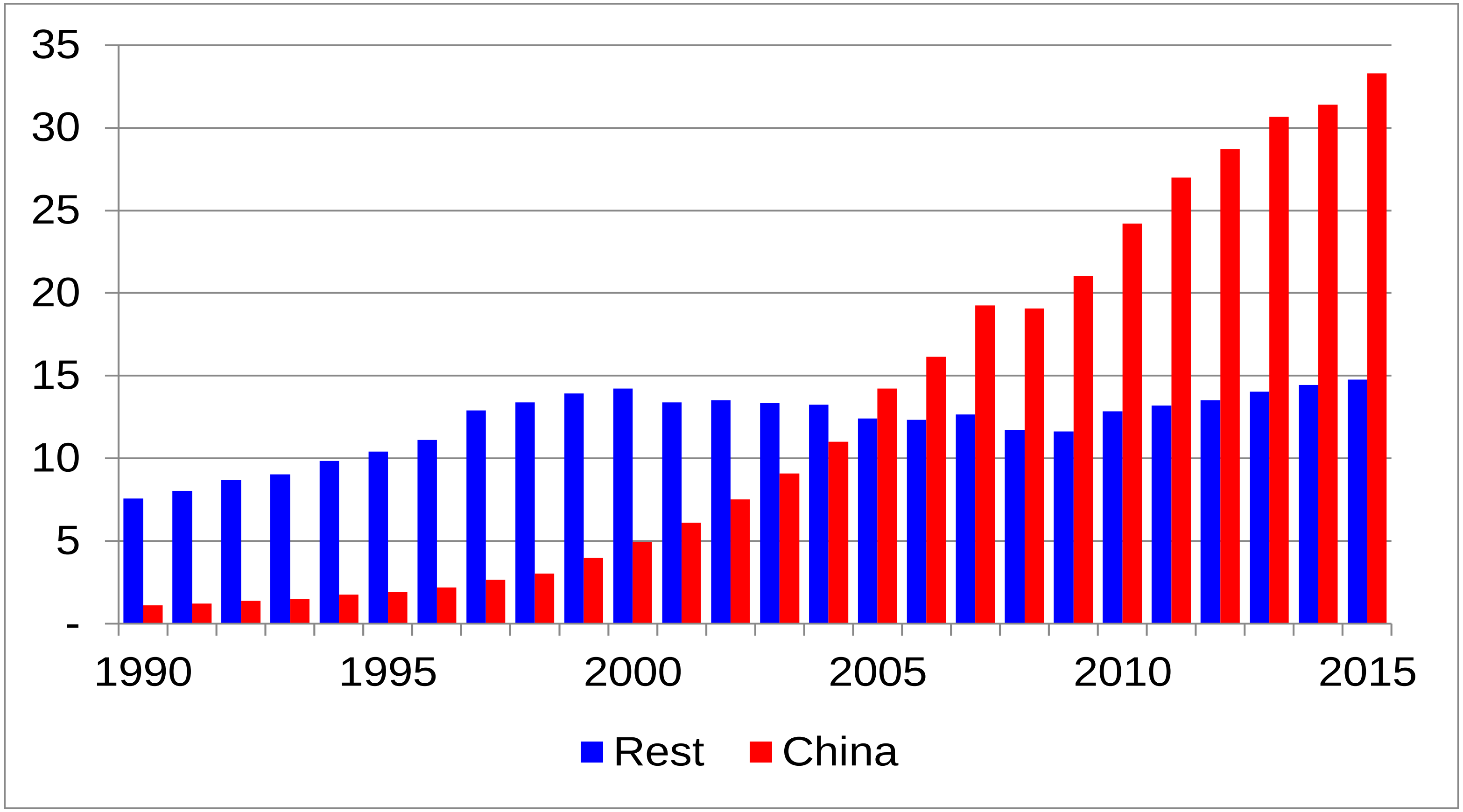
# China's Dominance of Polyester Production (million tons)



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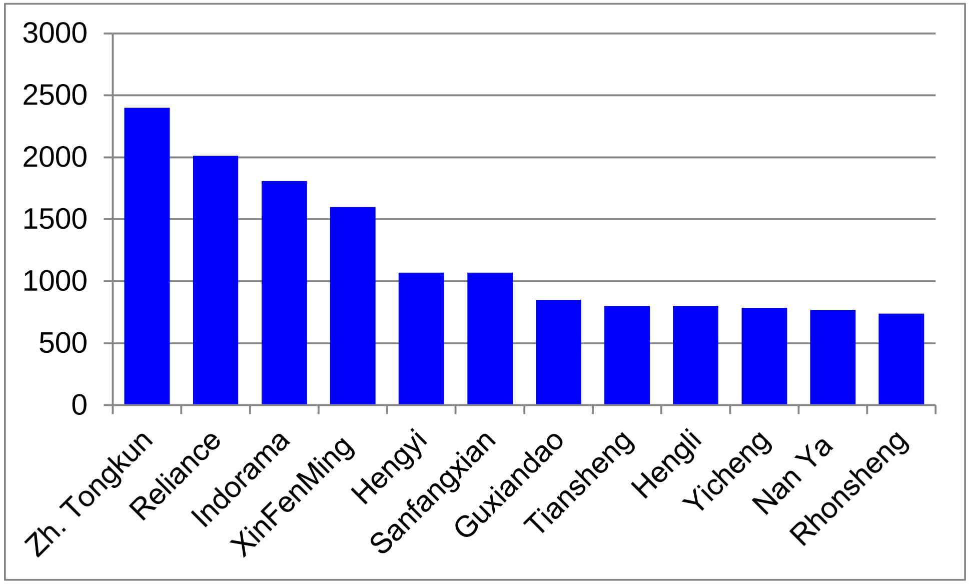
# China Competitiveness (1)

- **China starts with no basic advantage in oil prices, so why is polyester (and other fibers) cheaper than in the West?**

- **Scale: Of the 12 largest polyester producers in the world 9 of them are Chinese**




**Polyester Plant Capacities (000 tons)**

- **Of the 3 non Chinese companies, 2 have operations in China**

# China Competitiveness (2)

- **Polyester plants are highly integrated to raw materials.**
- **Plants financial structures are generally based on one profit center, not multi centers.**
- **Plants have received significant state government benefits to provide jobs. Land, loans, repayment terms, export subsidies.**
- **But can this last?**
- **5 Year plan starting 2016 made it clear that Central government is turning away from the policy of overbuild in established industries. It takes time to work its way to the regional levels.**
- **Employment is not the driver that it was – demographics.**
- **Anti dumping and Countervailing duties are a greater factor in trade**

# China Competitiveness (3)

- **Banking Issues:**
- **Report from Bank for International Settlements (BIS) – Bankers Bank**
- **China facing full blown banking crisis, one of the measures BIS uses is "credit to GDP gap" – a score of 10 signals a crisis "occurs in any of the three years ahead". In the Quarterly report BIS measures China current score at 30.1**
- **Outstanding loans in China have reached $28 trillion – more than the commercial banking systems of US & Japan combined. Corporate debt is 171% of GDP**
- **Peoples Daily states a very authoritative person warned that debt has been "growing like a tree in the air" and called for an assault on "zombie companies" saying that China cannot "continue to "force economic growth by levering up" and the country must take its punishment.**

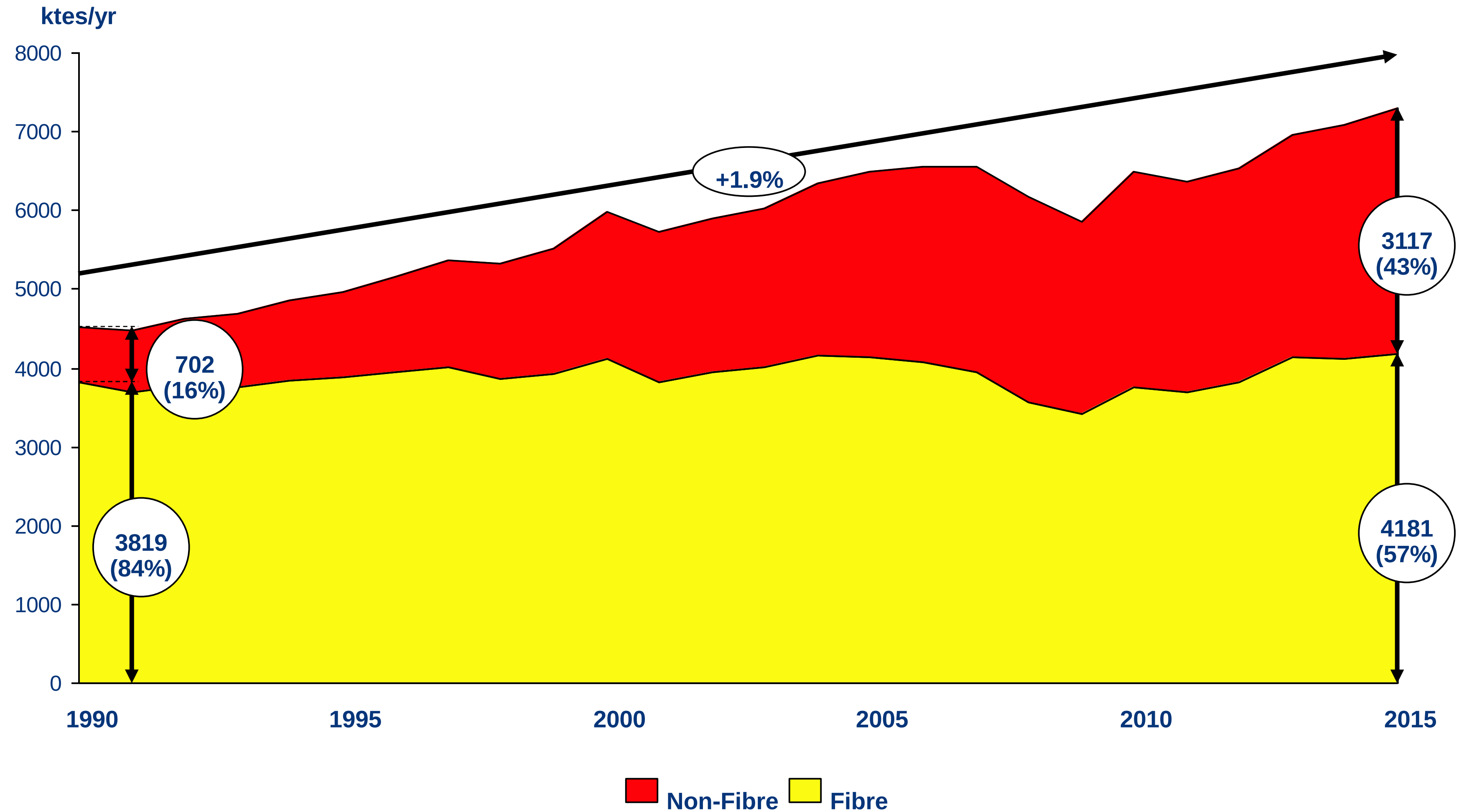
# Polyester is Constantly Looking for Opportunities to Gain Share

**All Fibers have to be aware of Polyester as it aims to take market share – and it has been very successful at doing it!**

**Nylon developed in the late 1930s by DuPont. First commercial Synthetic fiber – WW2, parachutes, ropes etc**
**Nylon applications in hosiery & intimate apparel: 1940s**
**Nylon into textured yarn – swimwear, and into Tirecord: 1950s**
**Nylon into carpets – 1960s**
**Nylon into Engineered Plastics 1970s**
**Nylon into Films 1980**

**Since then no new "segment" growth – applications like airbags, and demographics etc have increased volume, but polyester has effectively slowed growth by taking share of hosiery, intimate apparel, tires, carpets, performance apparel, sports uniforms etc. from nylon.**

# Demand for PA6+PA66 by Application

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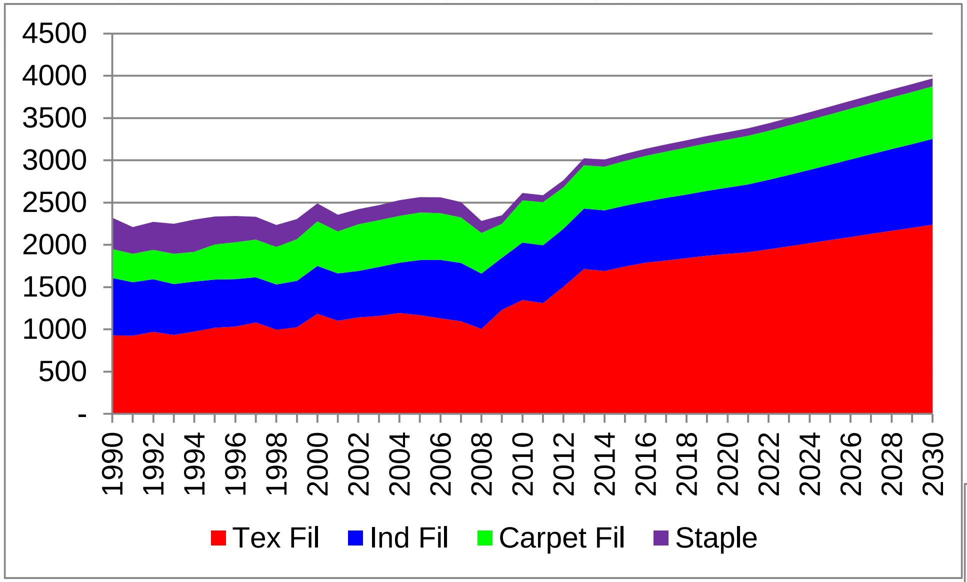
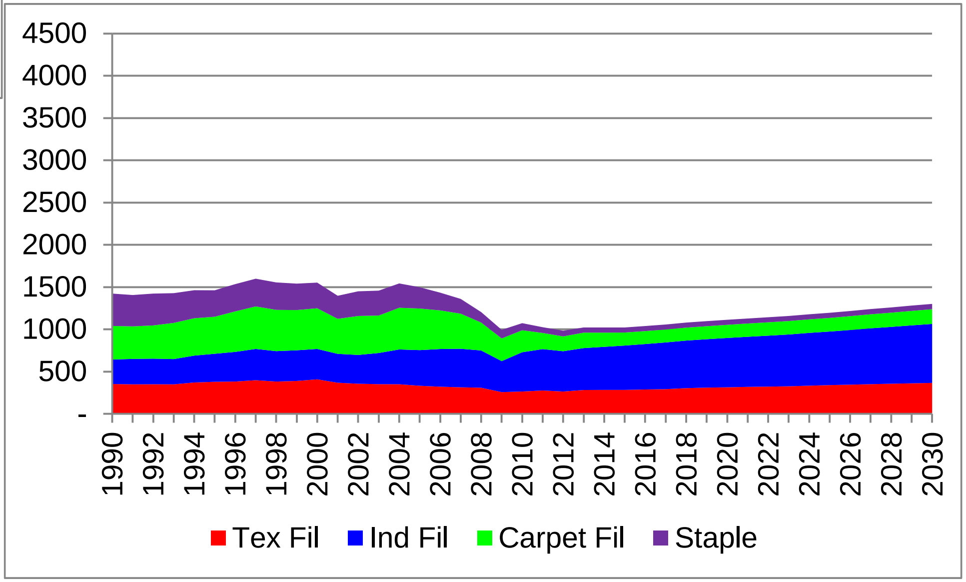
# Nylon Fiber Production 1990 – 2030 (000 tons)

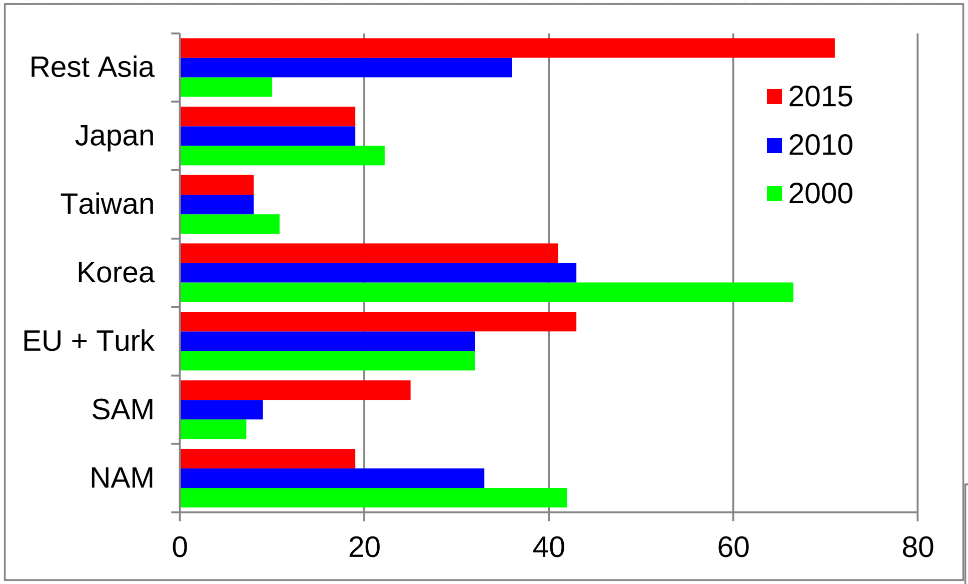


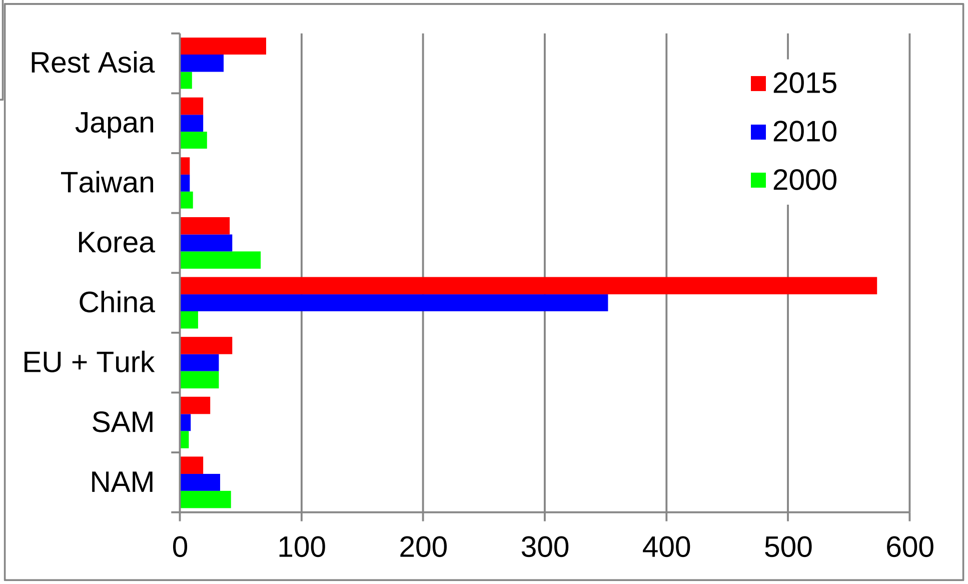

**Nylon 6**
**Fiber increases +71%**

**Nylon 66**
**Fiber decreases -8.5%**

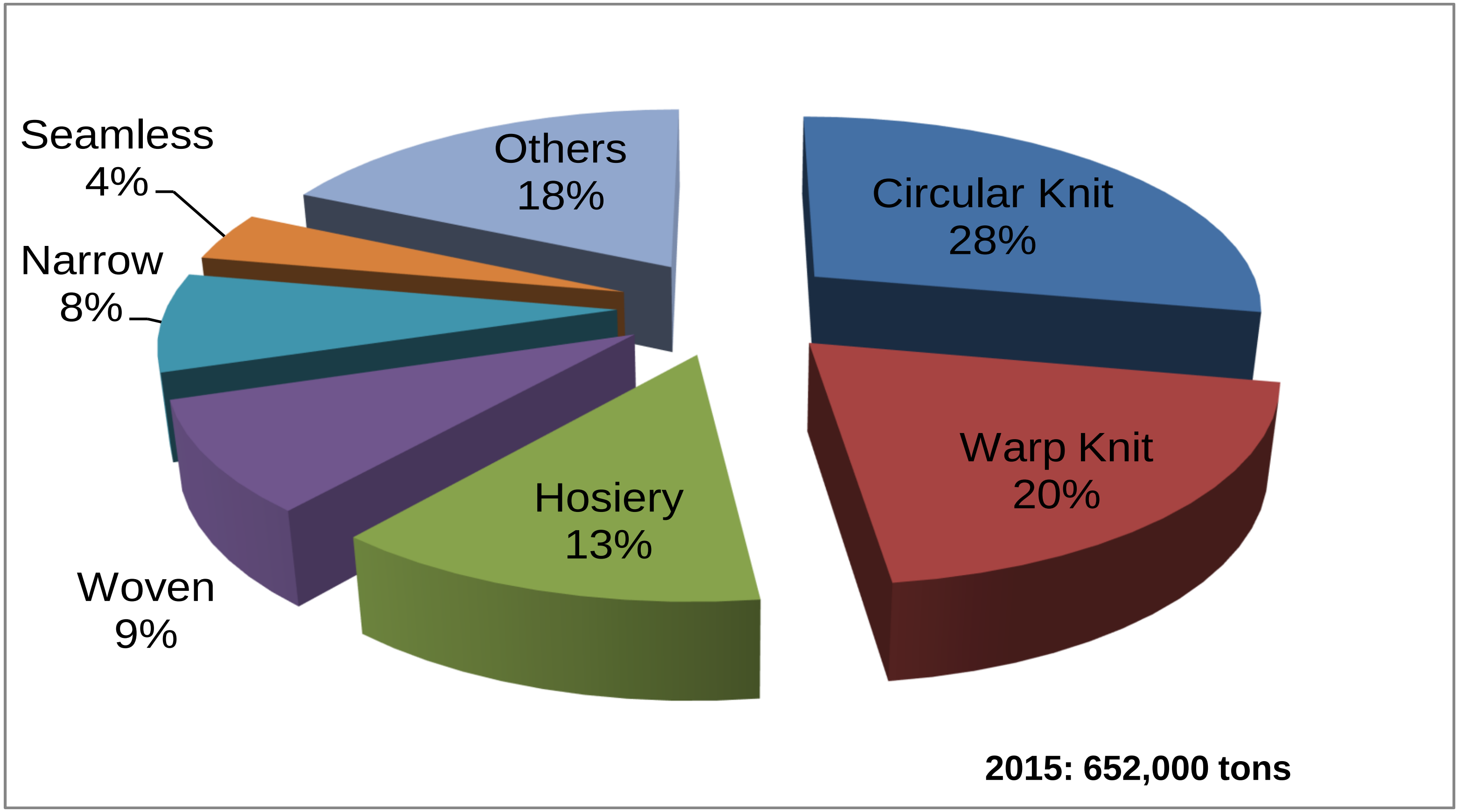


# Regional Spandex Capacities (000 tons)



# Global Spandex Consumption by End Use



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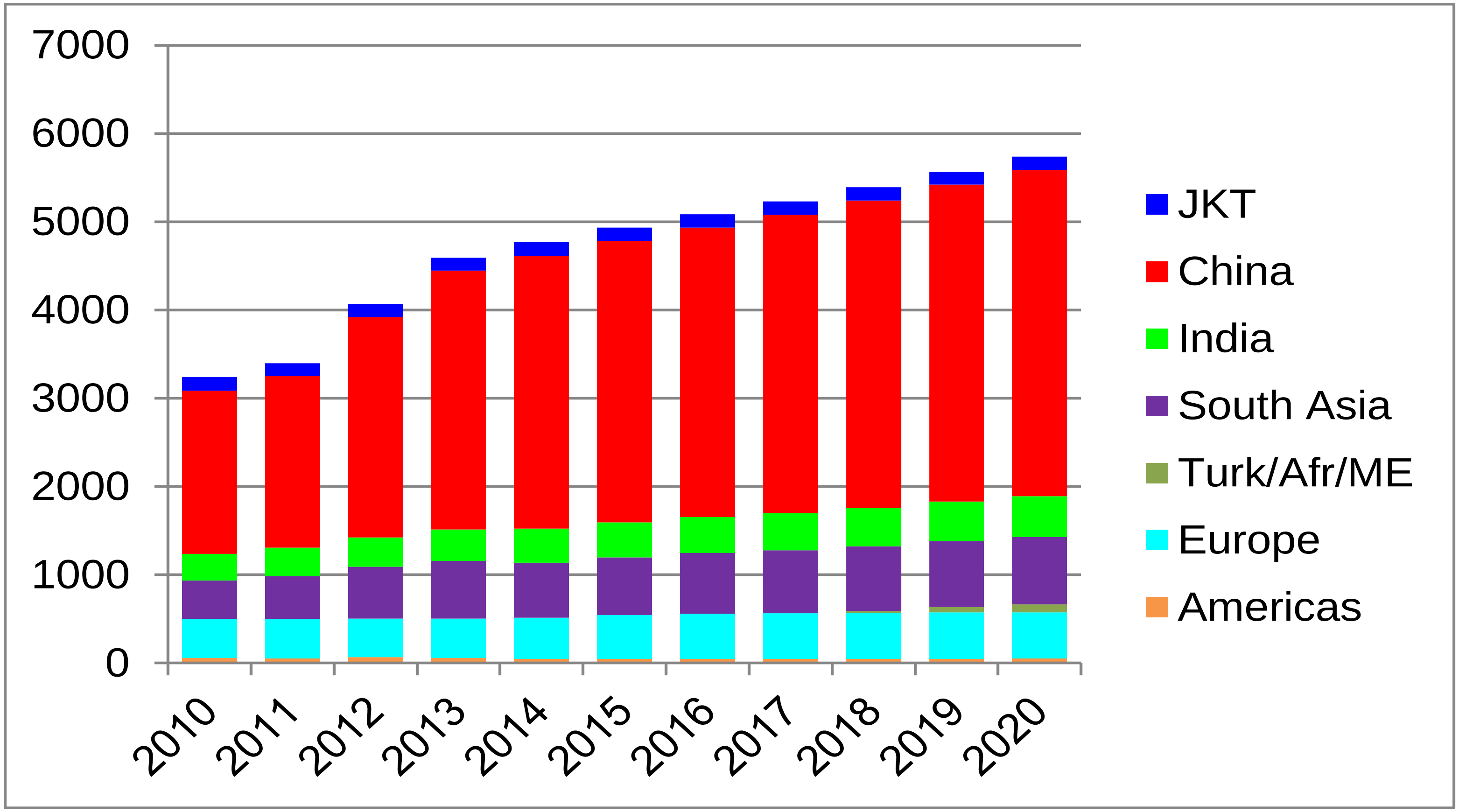
# Rayon Staple Production (000 tonnes)



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# Viscose rayon staple output has grown rapidly

- Even though viscose staple remains a small volume fibre.
- Demand has grown strongly between 2000 and 2015:
  - » Rising incomes
  - » Demand for comfortable clothing
  - » Demand for nonwovens, including wipes

| Fiber | CAGR 2000-2015 |
|---|---|
| Cotton | 1.2% |
| Cellulosic Staple | 7.0% |
| Cellulosic Filament | -1.7% |
| Wool | -1.8% |
| Acrylic Staple | -2.9% |
| Nylon Staple | -8.2% |
| Polyester Staple | 4.4% |
| Polypropylene/other Staple | -0.4% |
| Nylon Filament | 0.8% |
| Polyester Filament | 7.5% |
| Polypropylene/other Filament | 1.9% |
| **Total Fiber** | **3.6%** |



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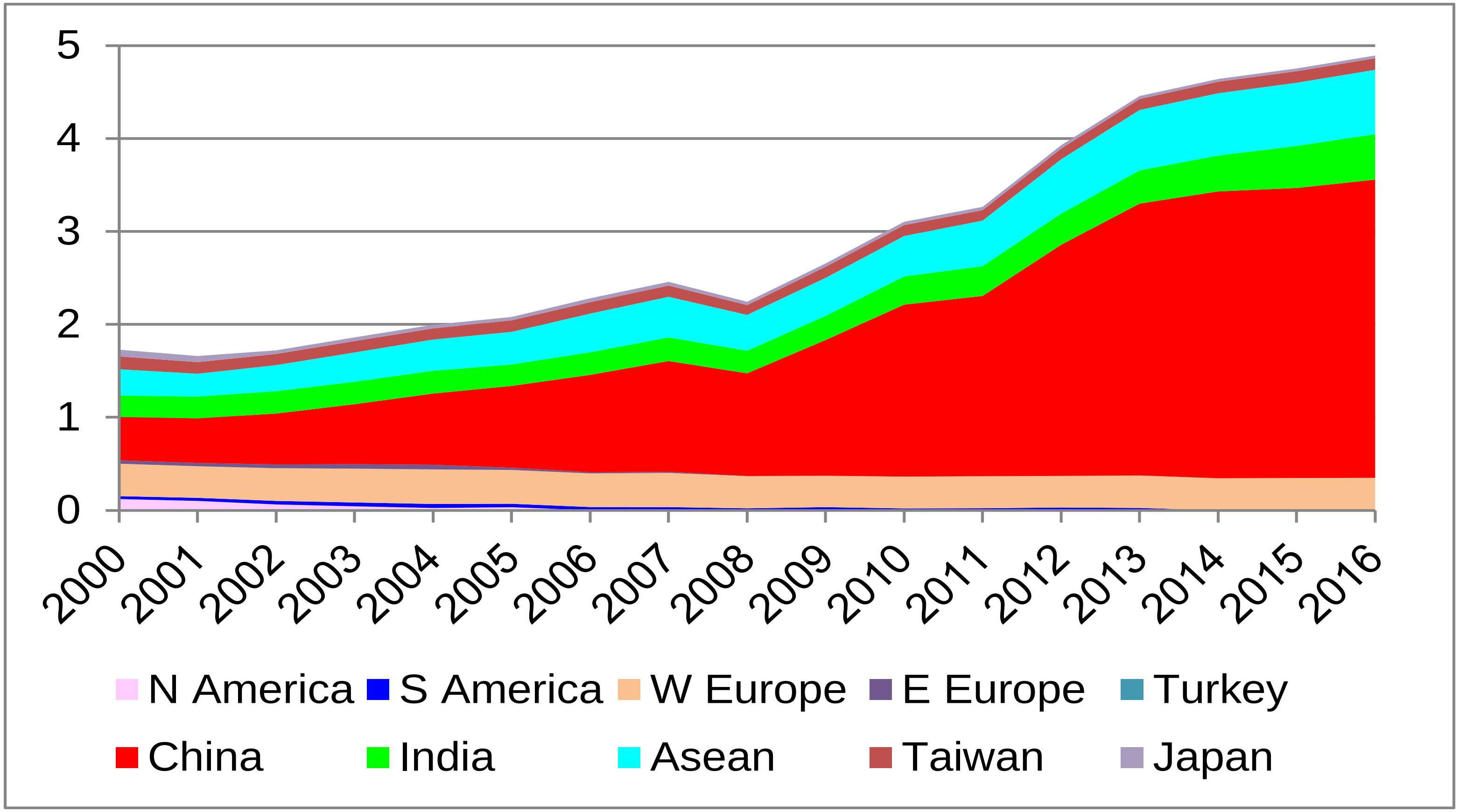
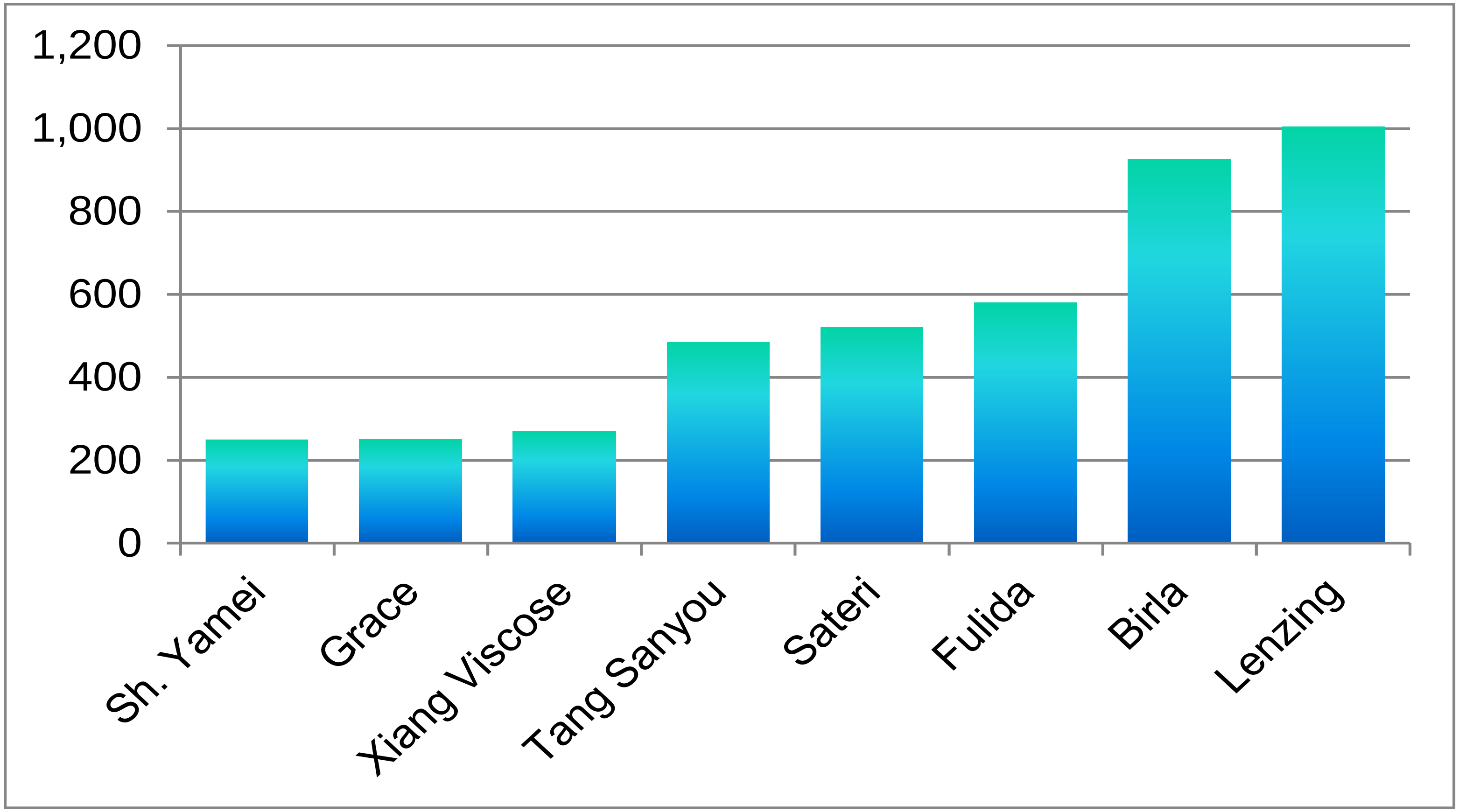
# Global Production of Viscose Staple Fiber (million tons)



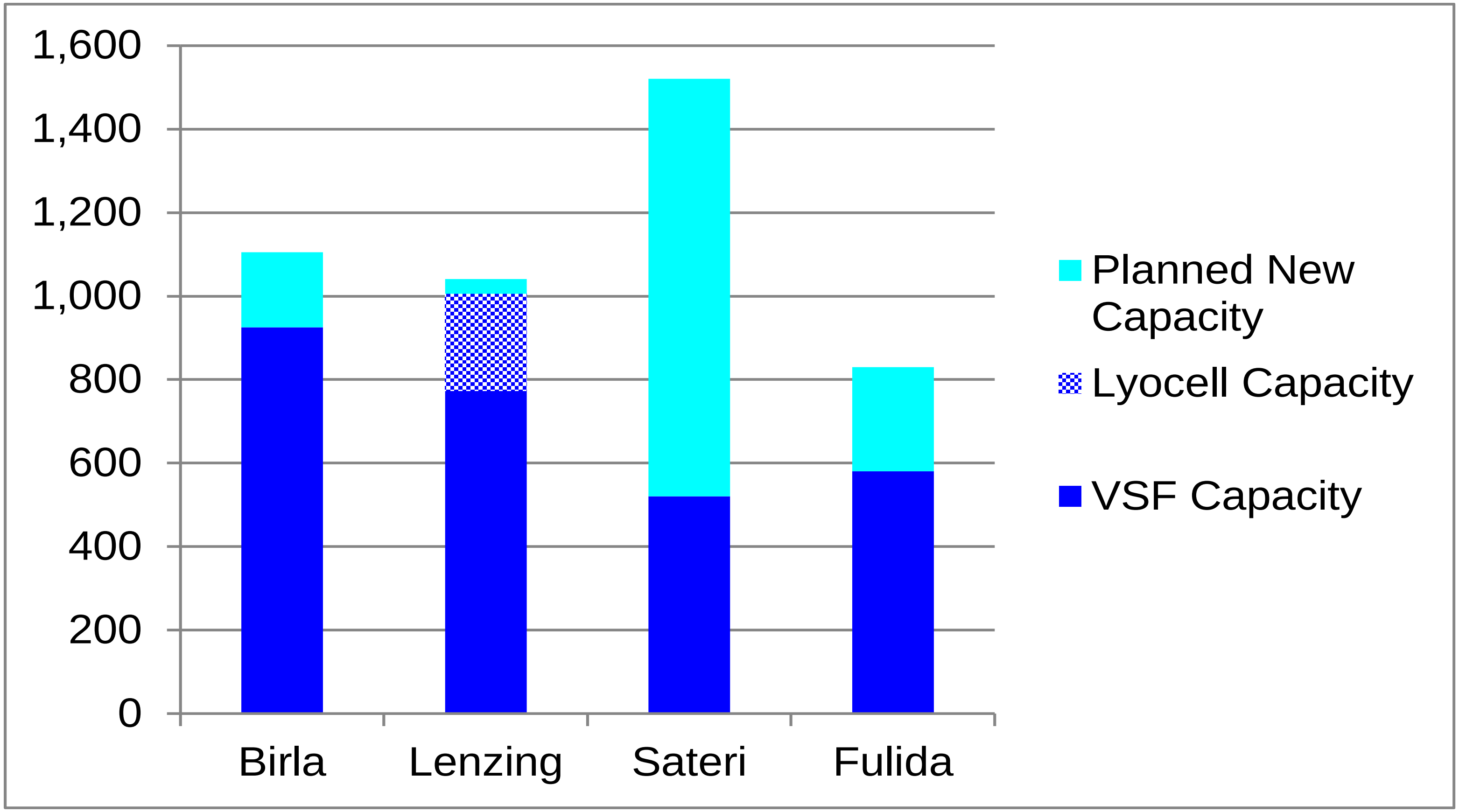
# Major Capacities of Viscose Staple Fiber (Rayon) 2016 (000 tons)

**Global Capacity is 5.7 million tons and these 8 companies have 75% share**




**Lenzing & Birla account for 34% of global VSF capacity**
**The next 6 producers (all Chinese) share of global capacity is 41%**

# Major Announced Expansions of VSF (Rayon) (000 tons)



# China Market Developments

**Hangzhou September 4 -5th 2016**

**Why is this relevant to a Synthetic Fibers paper?**

**Hangzhou is in Zhejiang province and is the center of a major industrial zone, with Jiangsu Province and Shanghai as neighbors. It is the greatest concentration of the polyester industry in the world. Also many of the downstream fiber and fabric producers are in the area.**

**In order to make the G20 guests as welcome as possible the government "asked" most industry to close for a period of at least 2 weeks to reduce pollution while the guests are in town!**

**For 2 weeks container trucks and cargo delivery trucks in Hangzhou will be stopped with a penalty od $14,000 and 15 days detention! – Serious stuff.**

# China Market Developments

G20 2016 CHINA

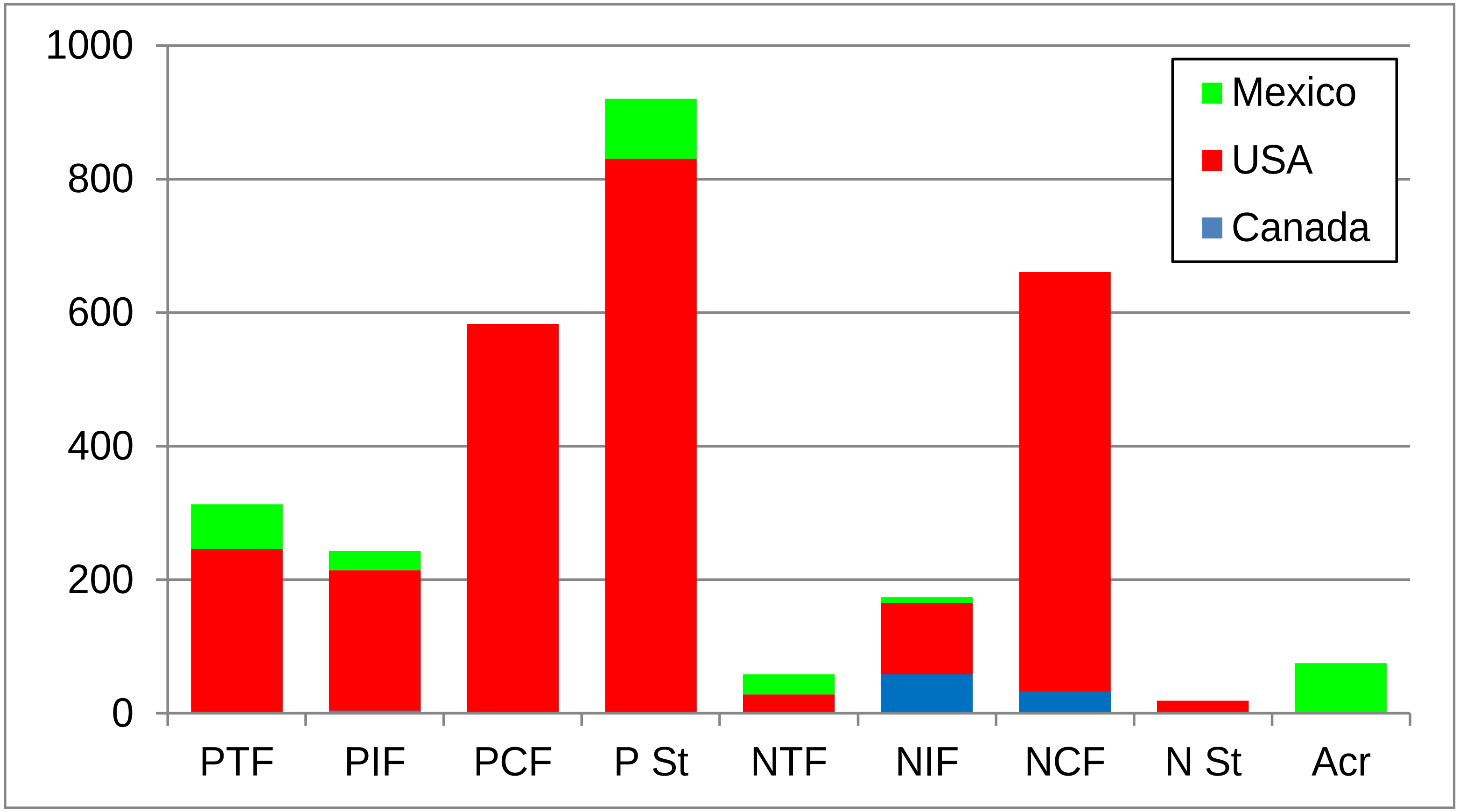
**Hangzhou September 4 -5th 2016**

**We estimate the following Impact on Synthetic Fibers**

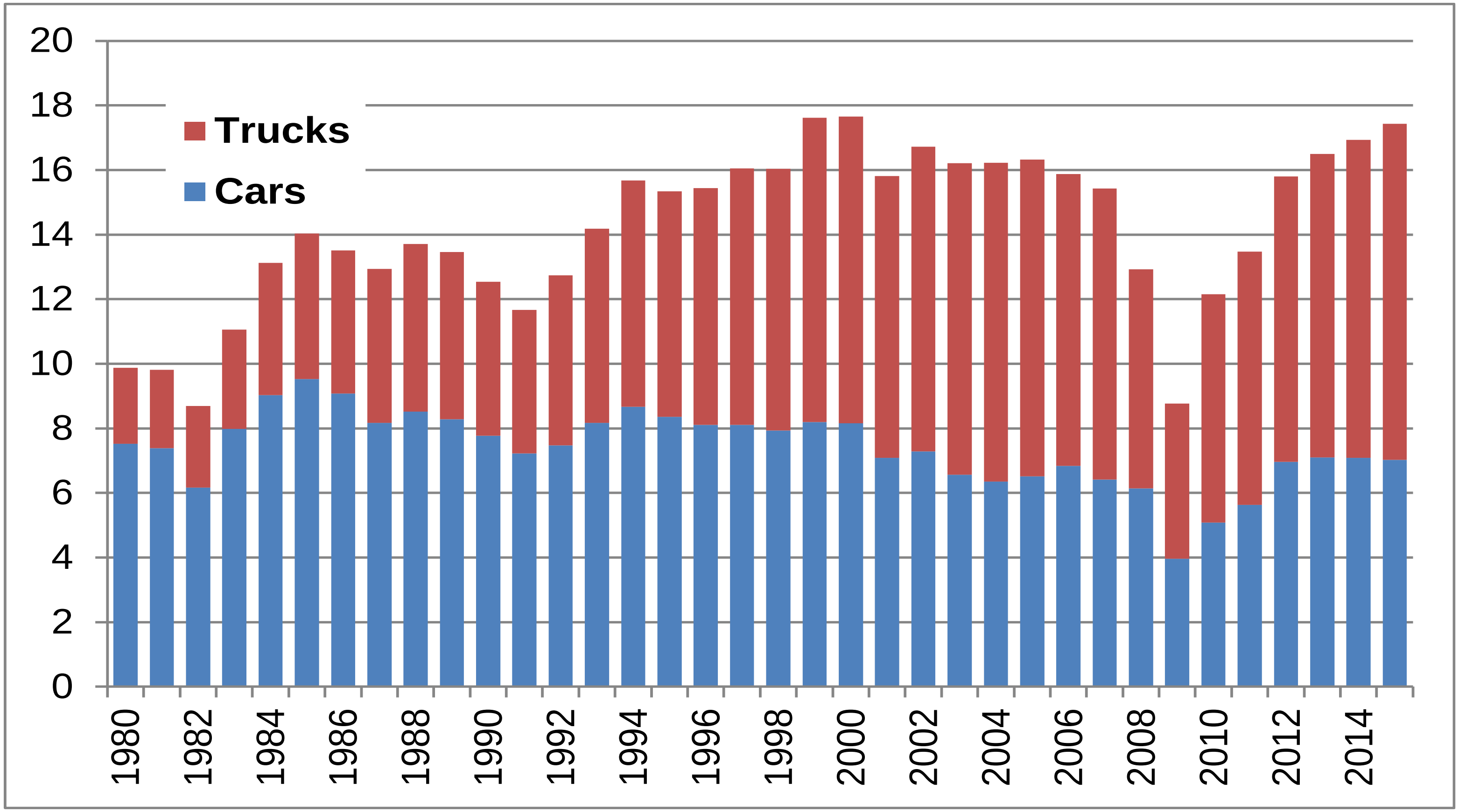
**PTA is the primary raw material for Polyester: 16 million tons closed**
**Polyester plants (fiber and plastics): 36 million tons closed**
**Many yarn spinners and fabric producers closed**
**All the textile printing, dyeing and finishing plants on the region will be closed**

**Plants expected to start to get back to production mid September, but probably end Sept/early October before full production. Down time could be 1 month – or 3 million tons of polyester – almost 4% of annual world production.**

# NAFTA – Major Synthetic Fiber Capacities (000 tons)



# NAFTA – Automotive Market, Light Vehicle Build (millions)



# NAFTA – Automotive Market – Mexico Investments

| New Automotive Plants in Mexico | | | | | |
|---|---|---|---|---|---|
| Company | Investment | Date Announced | Start Up | # of Vehicles | Location |
| | | | | | |
| Mazda | $500m | Jun-11 | 2014 | 140,000 | Guanajuato |
| Honda | $800m | Aug-11 | 2014 | 200,000 | Guanajuato |
| Nissan | $2,000m | Feb-12 | 2014 | 175,000 | Aguascalientes |
| Nissan - Daimler | $1,400m | Jun-14 | 2017 | 300,000 | Aguascalientes |
| Audi | $1,300m | May-13 | 2016 | | San Jose Chiapa |
| BMW | $1,000m | Jul-14 | 2019 | 150,000 | San Luis Potosi |
| Kia | $1,000m | Aug-14 | May-16 | 300,000 | Monterrey |
| Toyota | $1,000m | May-15 | 2019 | 200,000 | Guanajuato |
| Ford* | $1,000m | Jan-16 | | 350,000 | San Luis Potosi |
| Fiat Chrysler** | | Sep-16 | | | Toluca |
| Major Expansions to Existing Automotive Plants in Mexico | | | | | |
| | | | | | |
| GM (expansion) | $3,600m | Dec-14 | 2018 | | Various |
| VW | $1,000m | Mar-15 | 2017 | 125,000 | Puebla |
| Ford* | | Feb-16 | | 150,000 | Cuautitlan |
| | | | | | |



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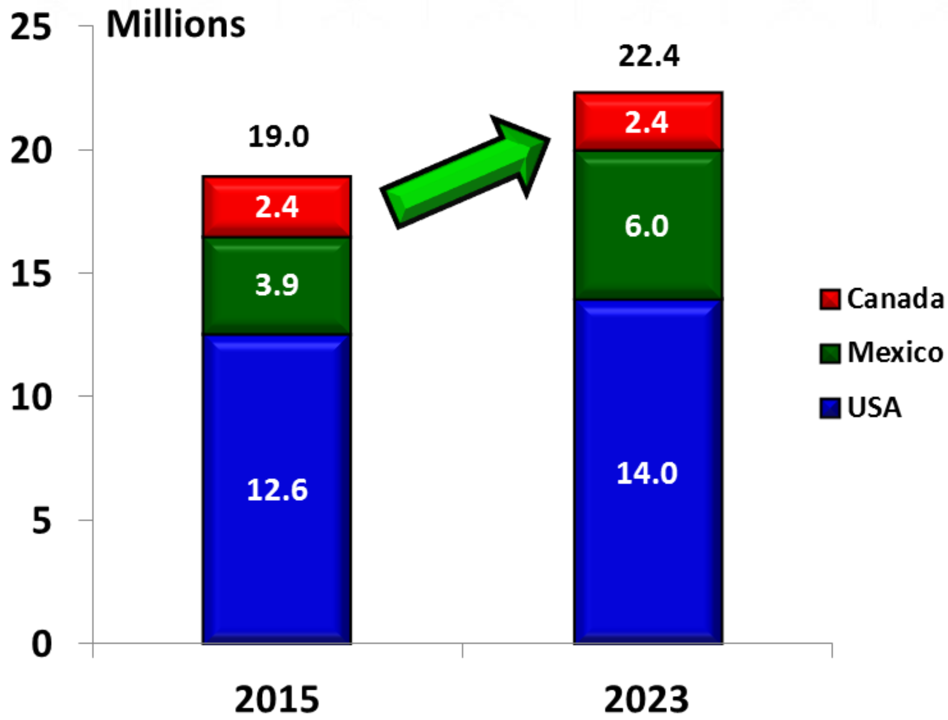
# NAFTA – Automotive Market – Synthetic Fibers Impact




Source: LMC Automotive

**Recent Supply Chain Investments**

- Goodyear investing $500m - Tires
- Michelin investing $500m - Tires
- Pirelli investing $200m – Tires
- Boxmark $100m – Seating
- Toray $100m – Airbags (10k tons of N66)

**Impact on Synthetic Fibers**

- Estimated that an average new vehicle uses:
- 15.4kgs of Polyester fiber
- 4.2kgs of Nylon

**19 million vehicle build**

- Polyester = 292,000 tons
- Nylon = 79,000 tons



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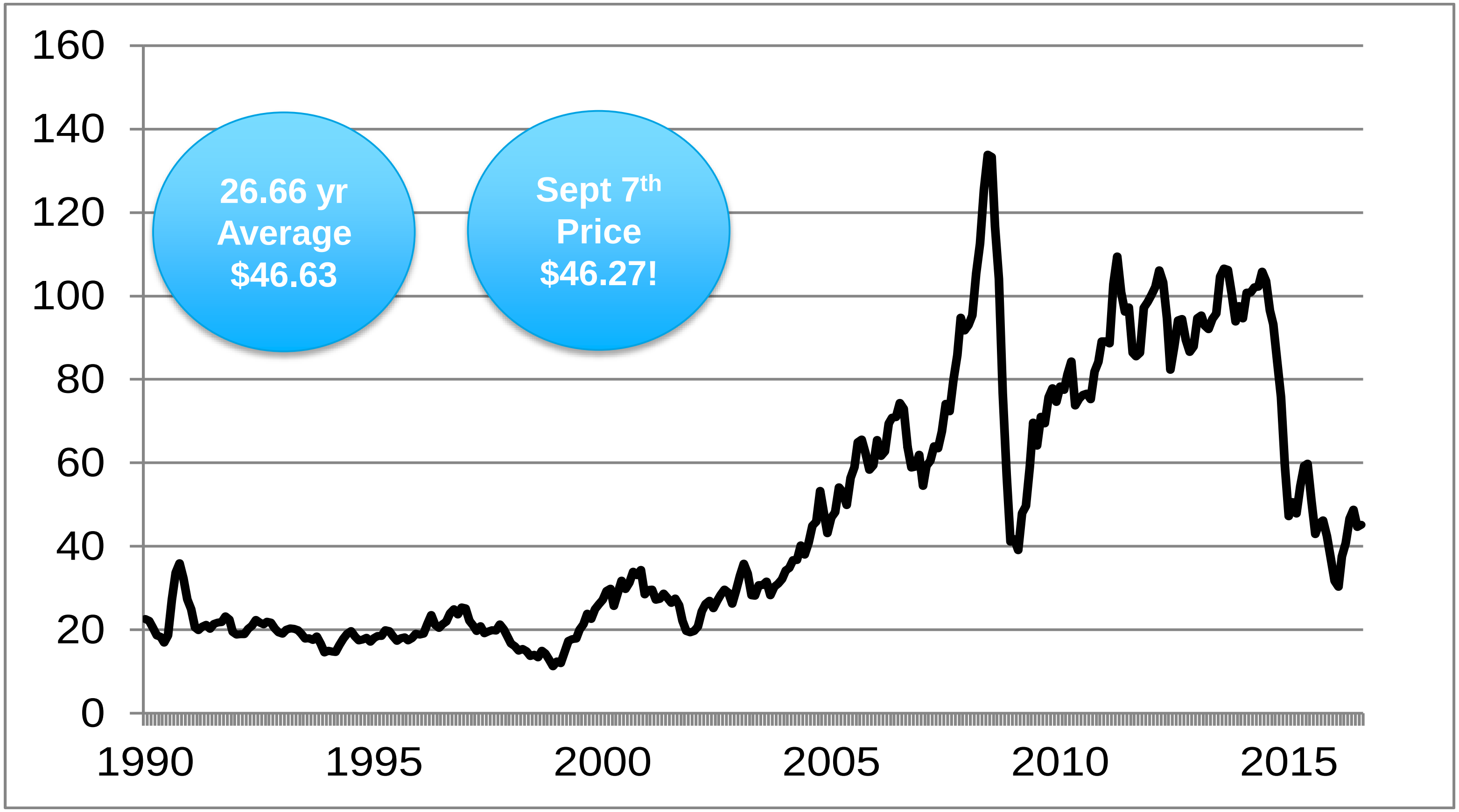
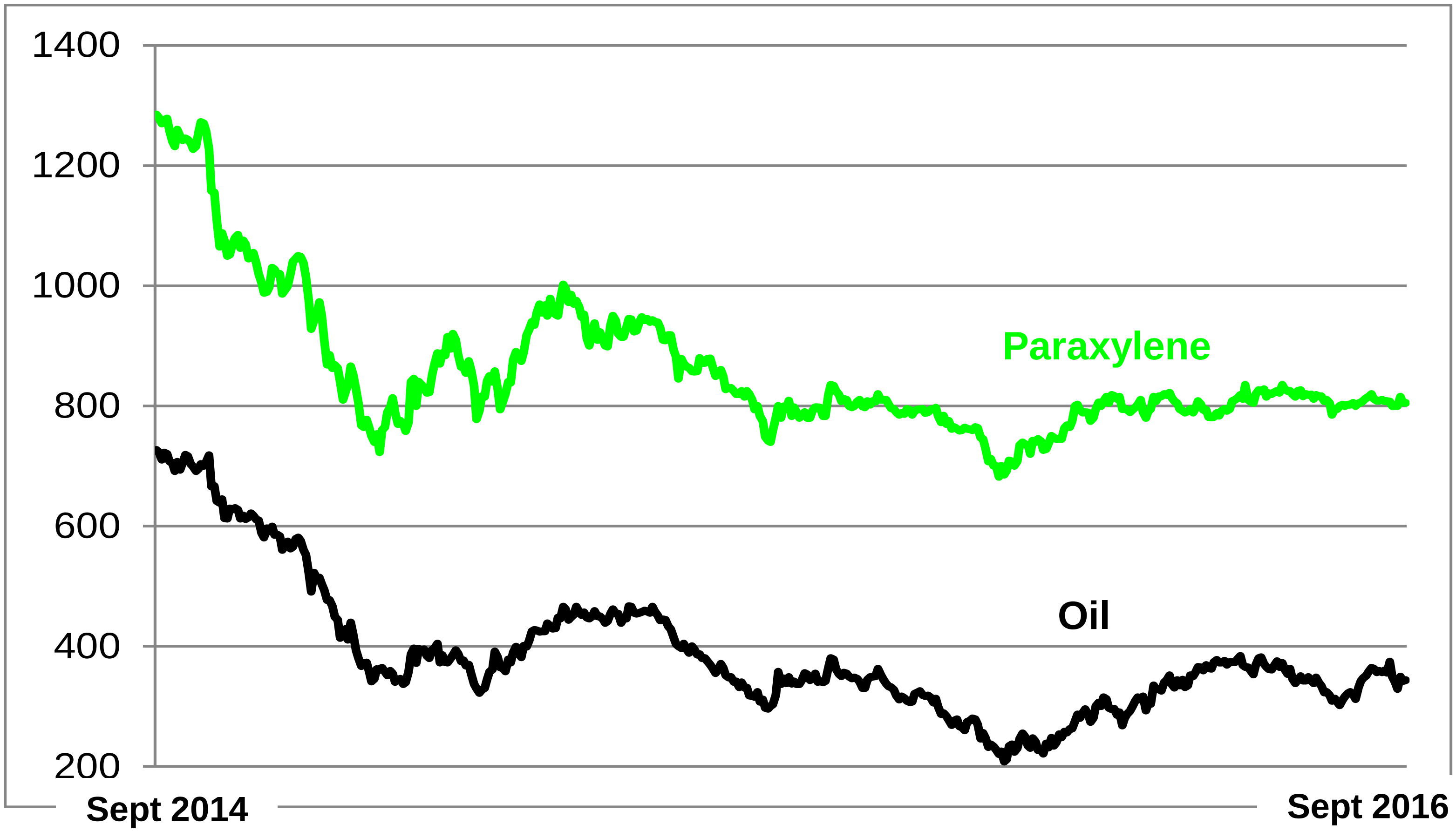
# Oil Prices  Monthly 1990 – Aug 2016, WTI $/barrel



# Oil as a Driver of Polyester Fiber Prices, China Daily Spot Market ($/ton)



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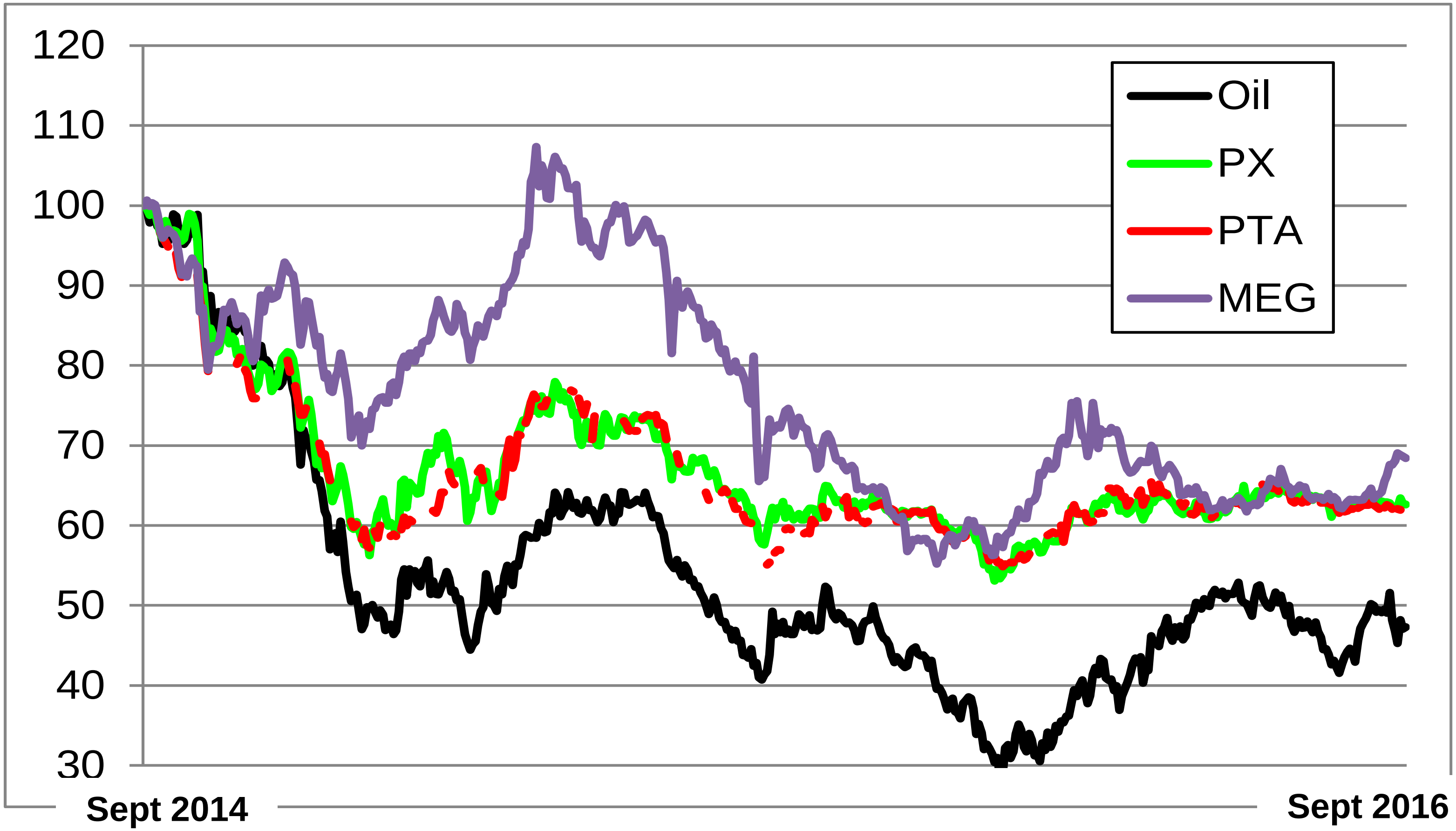
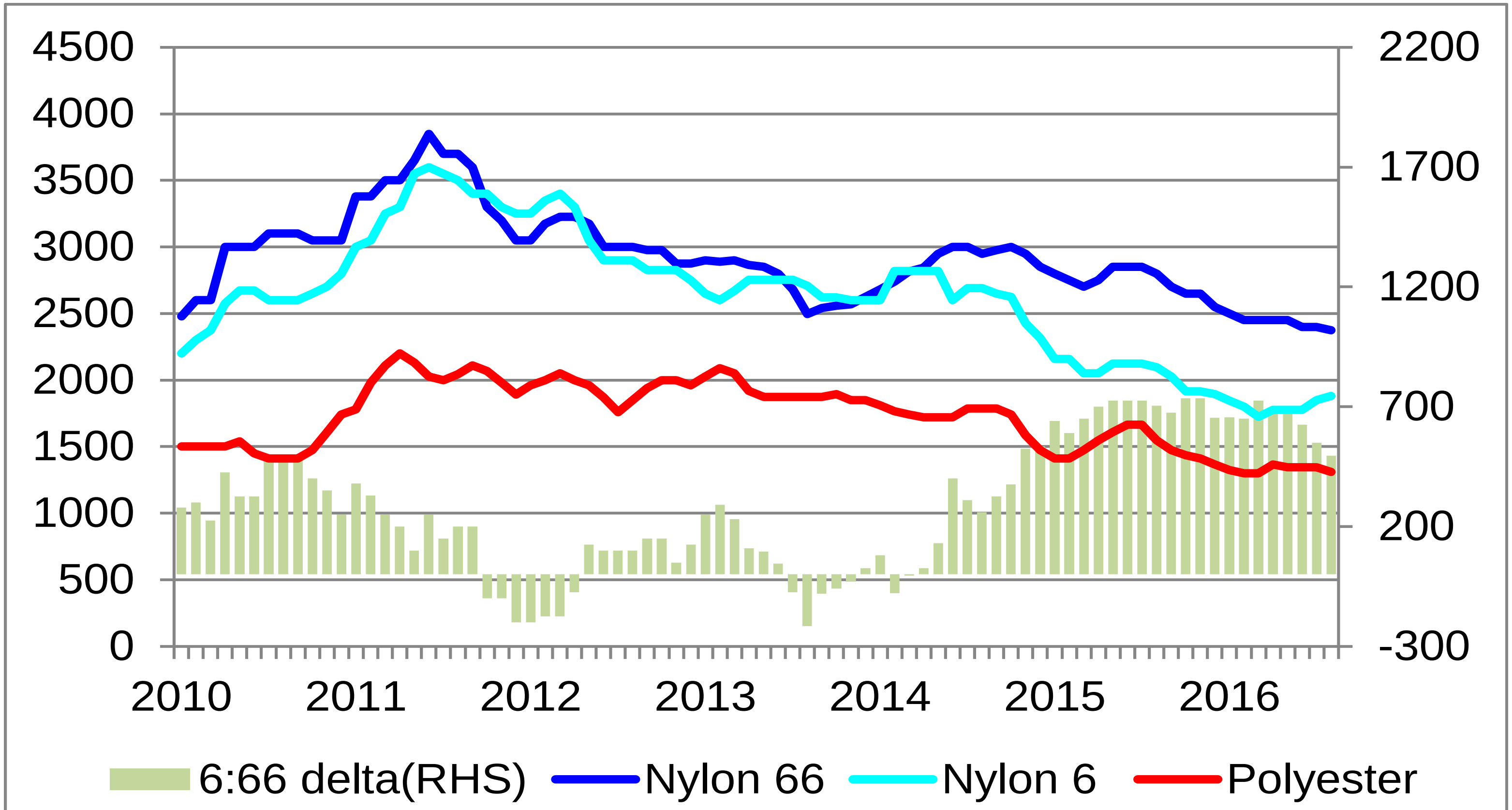
# Oil as a Driver of Polyester Fiber Prices, China Daily Spot Market – indexed to Sept 2014

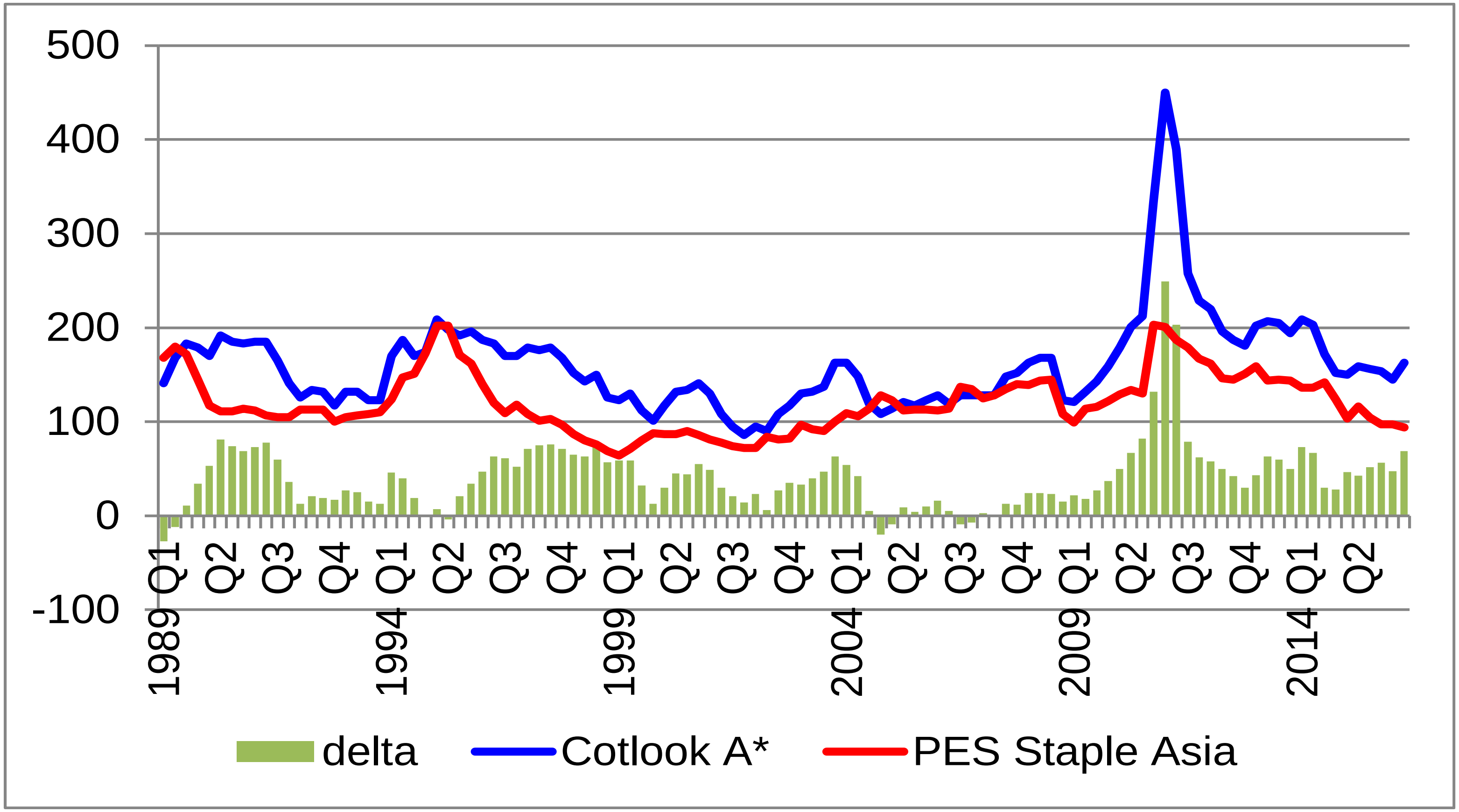


# Nylon 6 & 66 cf Polyester Polymer Prices N. America ($/ton)

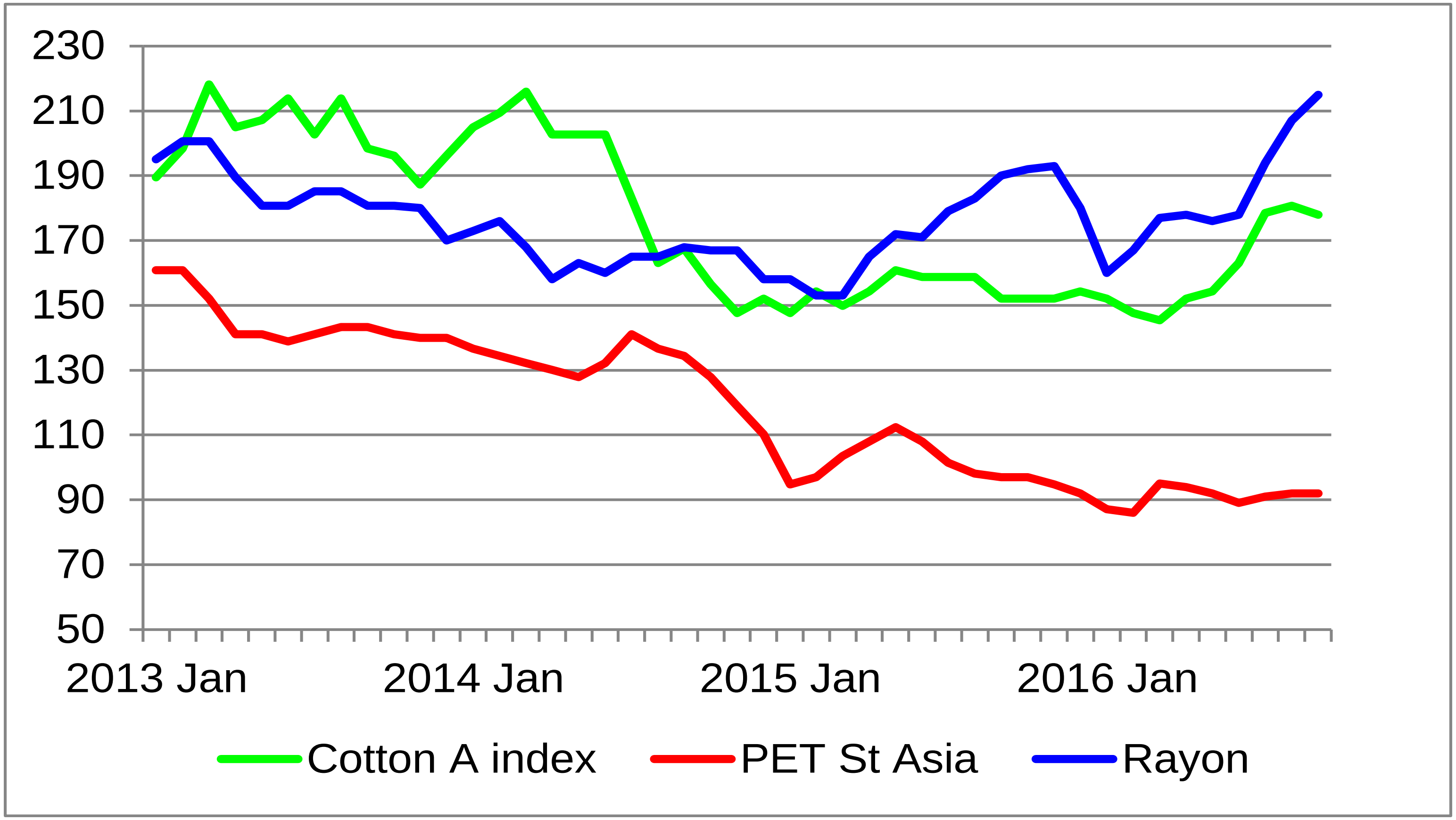



**Nylon 6 prices fall as China builds too much fiber and raw materials capacity in 2015**

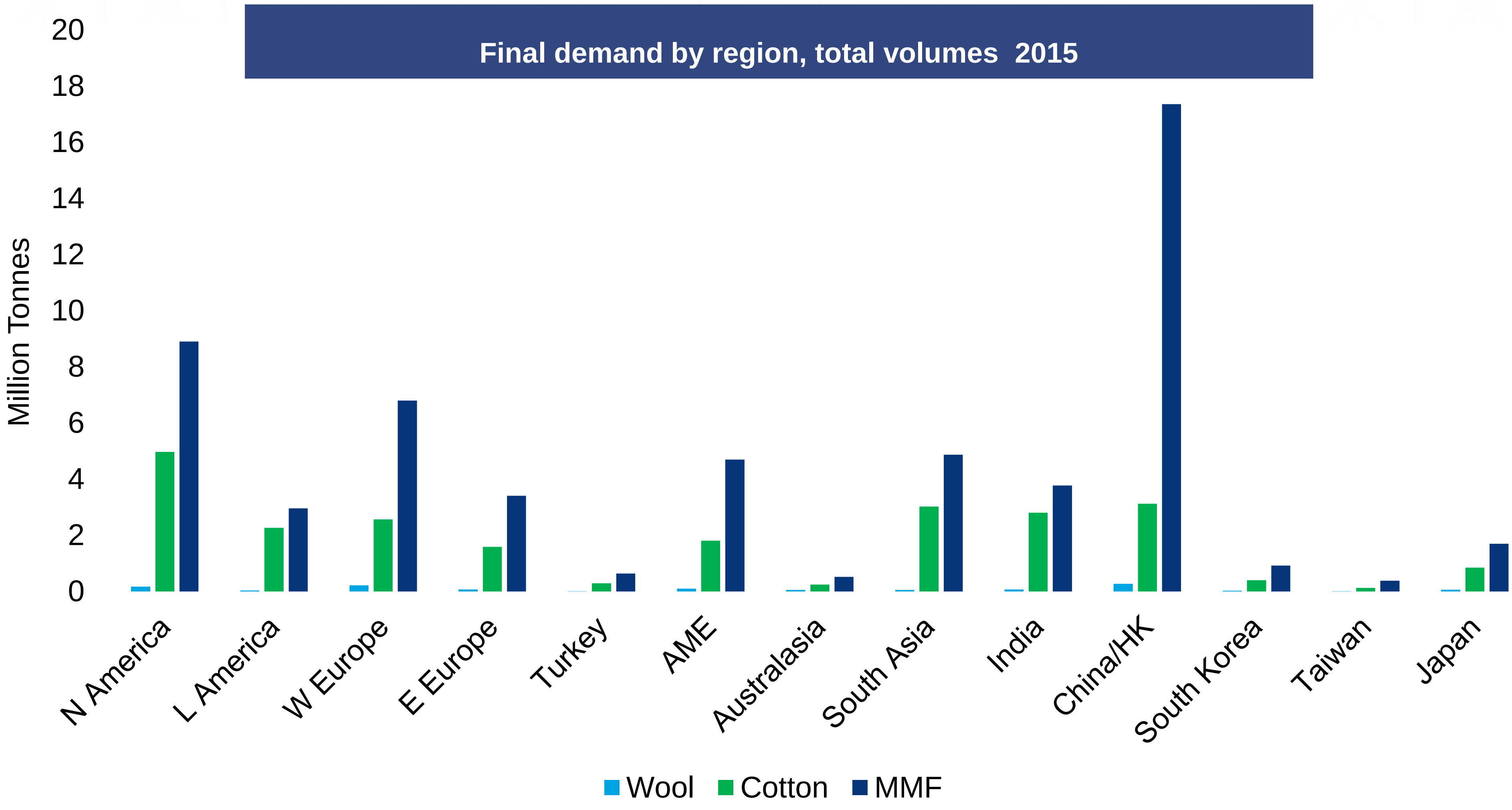
# Cotton (Far East A index) vs Polyester Staple (Asia) c/kg



# Cotton (A index) : Polyester Staple: Rayon (Asia) c/kg



# Final demand for MMF now exceeds that for cotton in all regions




***Source: PCI Fibres Red Book 2015***

# Thoughts

- **Man Made Fiber growth continues with Polyester & Rayon leading.**
- **Global Business generally slow, but pricing is stable.**
- **Trade: Are we in a period of Free Trade or Greater Protectionism? TPP or anti dumping??**
- **Will oil prices remain reasonably low? Our forecast is $XX/ barrel end of 2016.**
- **Overcapacity in Polyester and Nylon continues, large expansion in Rayon.**
- **Do current Shipping Industry problems encourage local manufacture?**

**Muchas Gracias**



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