

Dissolving Pulp: The Great Comeback **“It’s All About Cotton!”**

TAPPI PEERS Dissolving Pulp Forum
2-3 October, 2011

Gordon Floe, Pöyry Management Consulting

PRESENTATION CONTENTS

- **How it all Got Started**
- **Background**
- **History and Turnaround**
- **Textile Fiber Consumption**
- **Price Correlations**
- **Conclusions: How Will it all End?**

PÖYRY INTRODUCTION

GLOBAL EXPERTS IN CONSULTING AND ENGINEERING

- Pöyry is a global consulting and engineering company dedicated to balanced sustainability and responsible business
- 7 000 experts in about 50 countries
- Project experience in over 100 countries
- 15 000 projects annually

- Net sales in 2010 EUR 682 million
- Listed on the NASDAQ OMX Helsinki



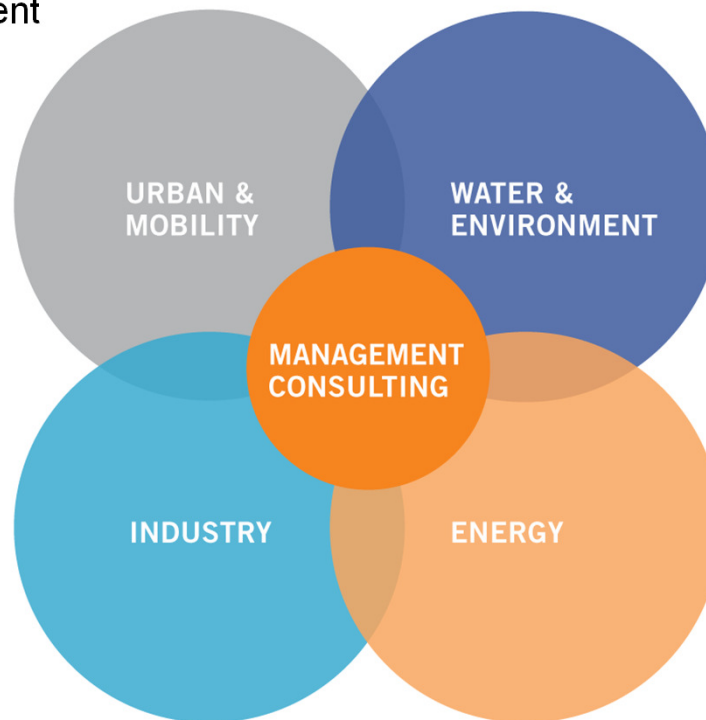
WIDE RANGE OF DEEP EXPERTISE

URBAN & MOBILITY

- Urban planning
- Real estate development
- Transport planning
- Rail infrastructure
- Road infrastructure
- Construction management
- Building design

INDUSTRY

- Pulp and paper
- Chemicals
- Minerals processing



WATER & ENVIRONMENT

- Water
- Wastewater
- Waste
- Environment

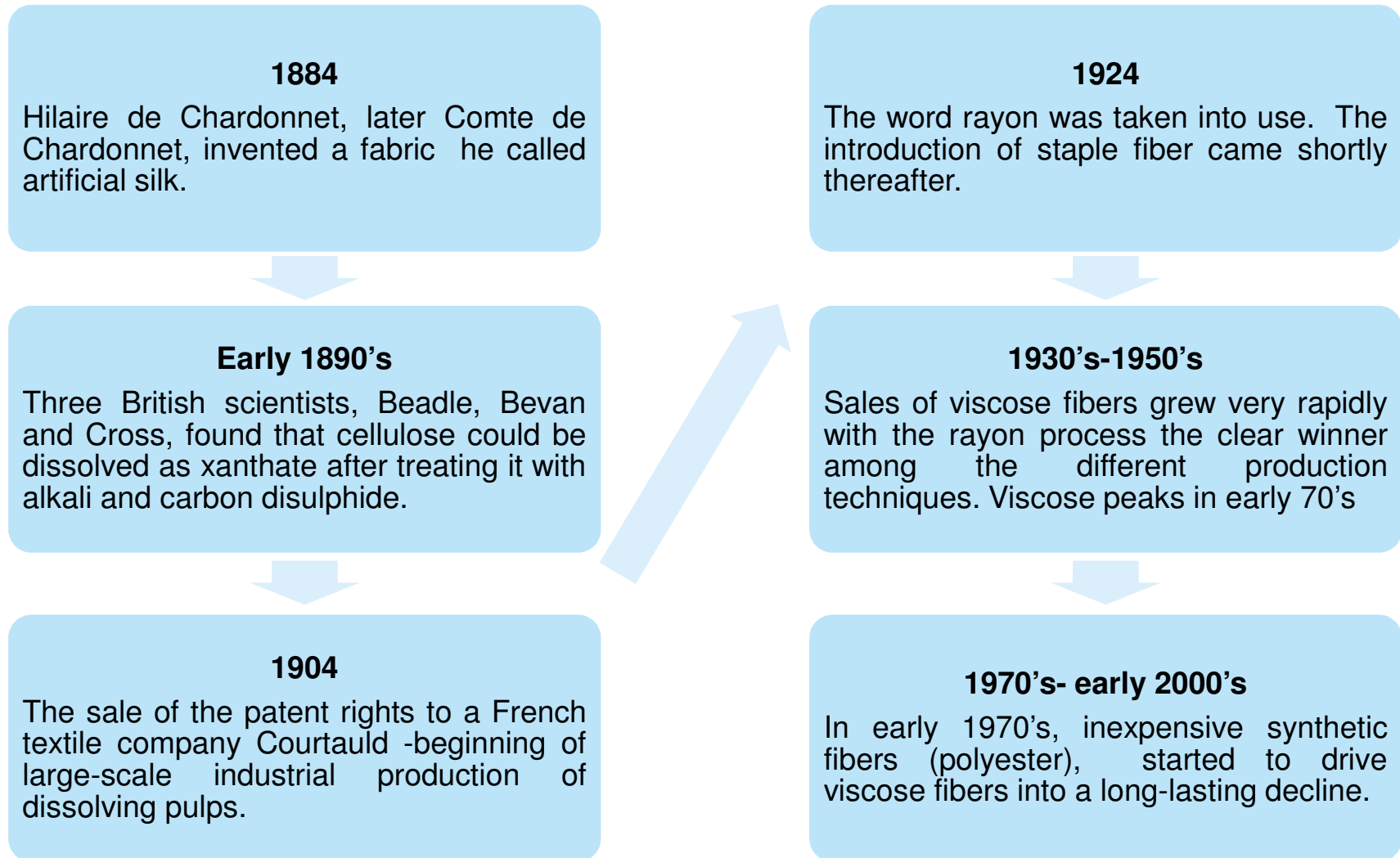
ENERGY

- Hydropower
- Thermal power
- Bio-renewables
- Oil and gas
- Nuclear energy
- Transmission and distribution

DISSOLVING PULP

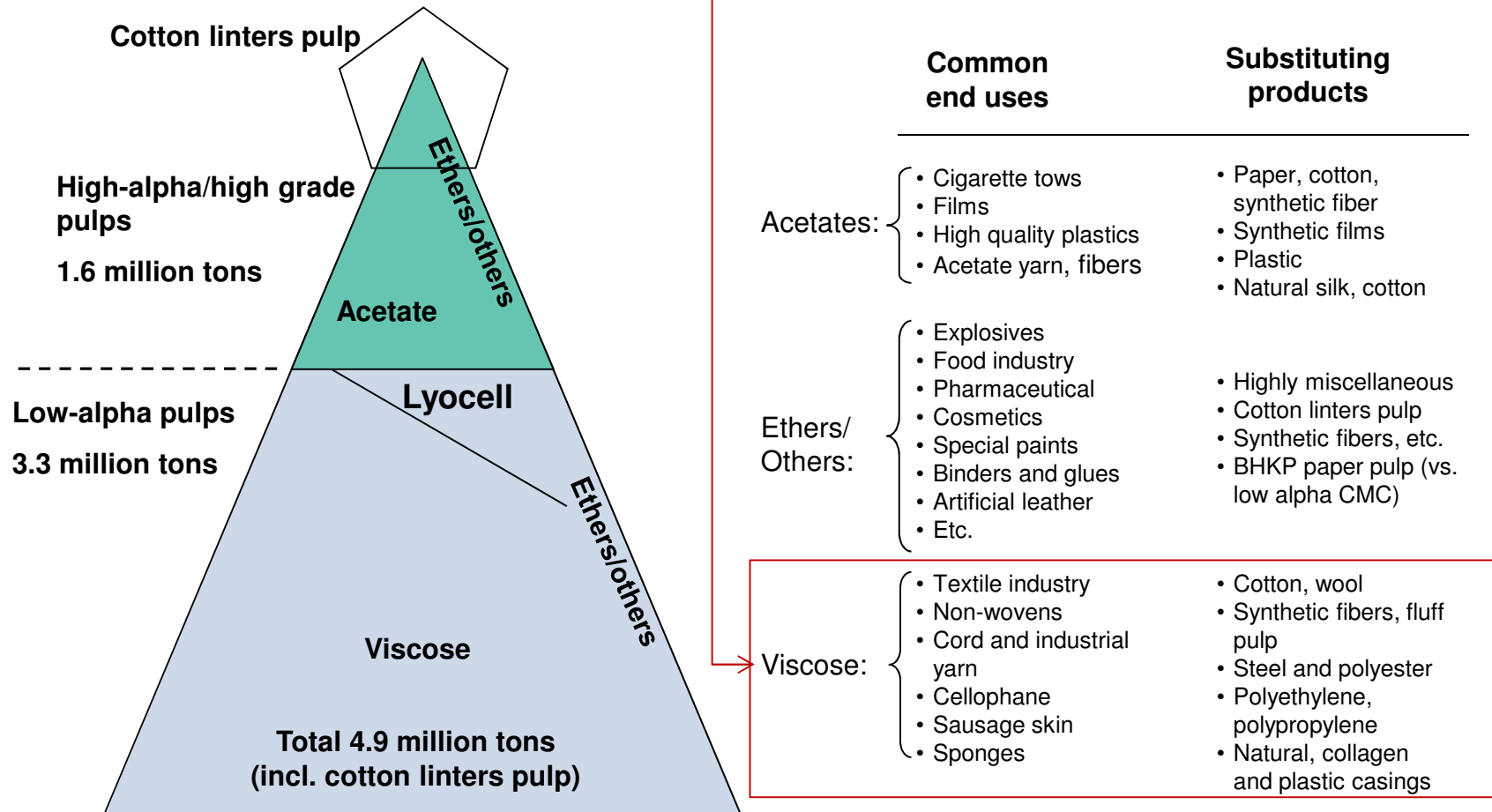
Market history, development and characteristics

HOW IT ALL STARTED



BACKGROUND

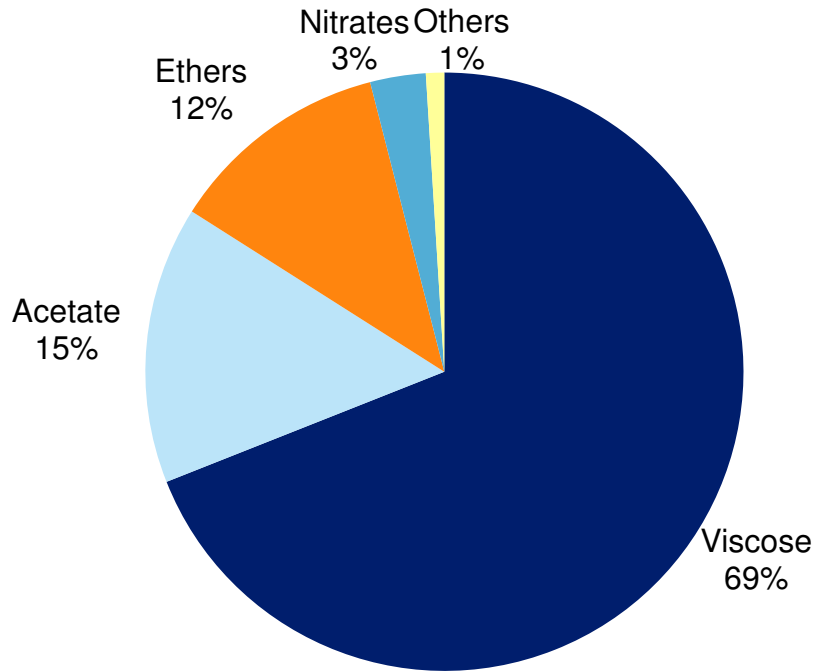
Dissolving pulp is a family of pulps with high alpha-content, which are used in a multitude of end-uses, as illustrated below. The key focus of this discussion is viscose pulp used in the textile industry.



BACKGROUND- DEMAND BY END-USE

High-grade products such as acetates, especially cigarette filter tow, are expected to grow fast. Viscose products have declined in the past, but are now expected to increase fast due to rapid growth in Asia and reduced supply of cotton.

Demand by End-use in 2010



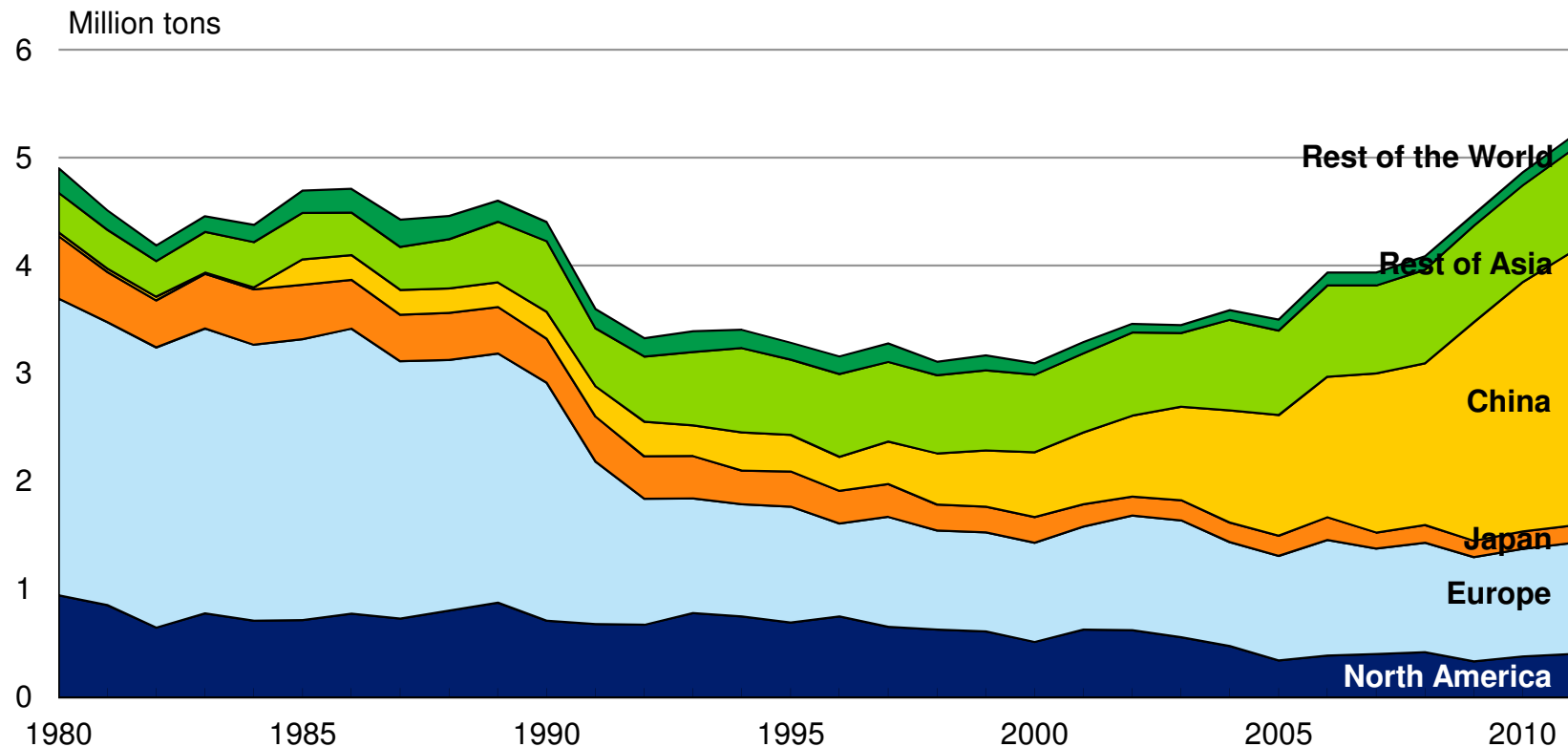
Total market 4.9 million tons*

*Including 1.1 million tons cotton linters for various end-uses, mainly viscose (in China), nitrates and other very high-alpha products

End-use	Future trend
Viscose products	
- Rayon staple	++
- Rayon filament	+/-
- Rayon cord	+/-
- Cellophane & others	+/-
Total	+/-
Acetate products	
• Filament	-
• Cigarette filter tow	++
• Other acetates	+
Total	+
<i>Nitrates</i>	+/-
<i>Ethers (CMC etc.)</i>	++
<i>Others</i>	+
Grand Total	+



HISTORY AND TURNAROUND

World consumption of dissolving wood pulp decreased from 4.9 million tons in 1980 to about 3 million tons in 2001 but has been rising since. In the early 1970's, inexpensive synthetic fibers, (nylon, polyester, polypropylene), started to drive viscose fibers into a long-lasting decline. End-uses other than textile faced problems as well. Explosives were developed from non-cellulose raw materials and rayon tyre-cord was replaced by a combination of polyester and steel reinforcement fibers in car tires. Demand recovery now back to 1980 levels; estimated at 4.9 million ADt/a in 2010 and could reach 5.2 million in 2011



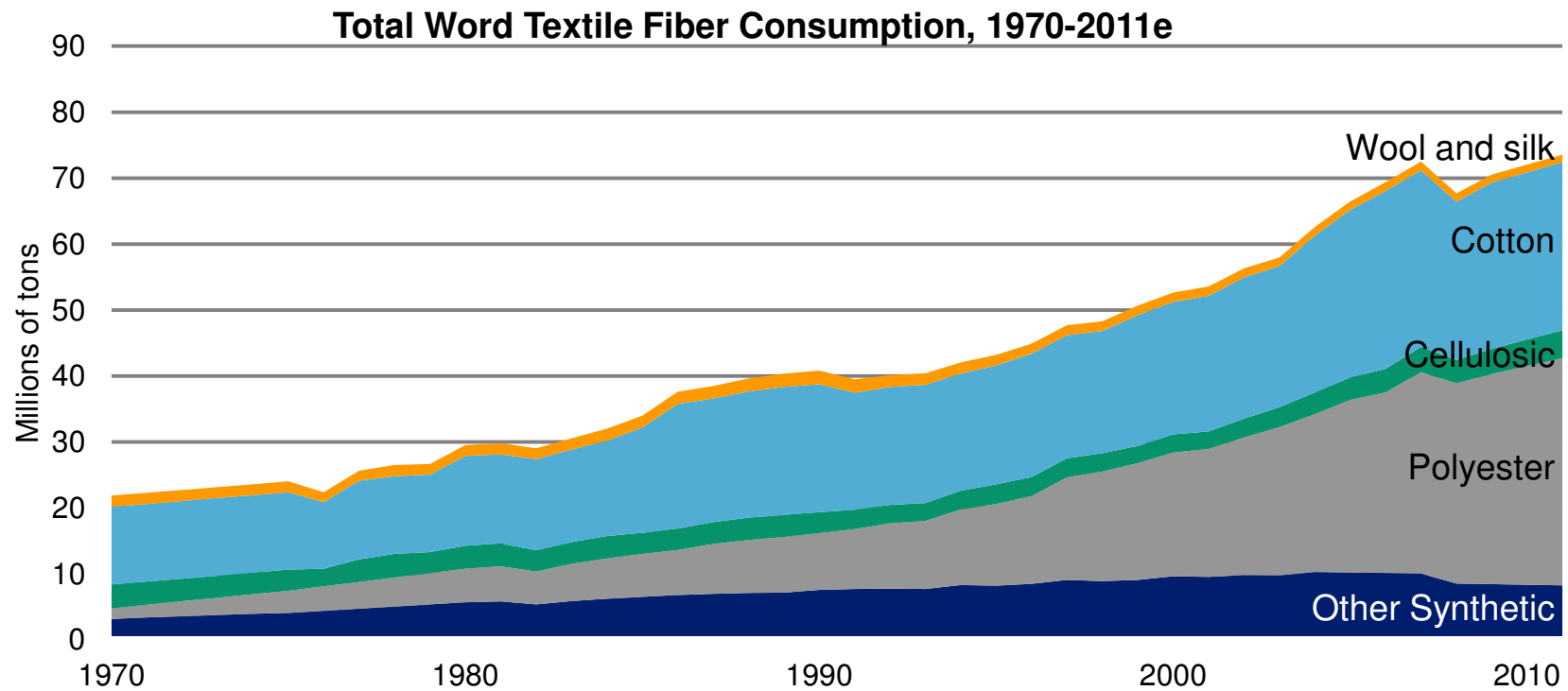
WHAT'S DRIVING THE TURNAROUND?

More positive DP demand drivers than negative

Population Growth and Demographic Changes	Economic Growth and Increasing Purchasing Power	Industrialisation in High Population Areas	Environment / Technology
 <ul style="list-style-type: none"> • Young in developing countries • Population growth in general 	<ul style="list-style-type: none"> • High energy price & substitution • Life-style changes • Convenience • Economic growth/ private consumption Growth in the average per capita income, especially in the emerging markets 	<ul style="list-style-type: none"> • Globalisation • Industrialisation of developing world • Limitations in the cotton supply • Competition for land • New applications and end-uses 	<ul style="list-style-type: none"> • New applications and end-uses • Substitution of polyprop. in non-wovens • Tech. dev. in textiles & non-wovens. New applications and end-uses + the technical development (especially viscose use in textile blends) • New end-uses • Renewability
 <ul style="list-style-type: none"> • Population decline & aging 	<ul style="list-style-type: none"> • Substitution by even higher value products 	<ul style="list-style-type: none"> • Protectionism 	<ul style="list-style-type: none"> • High investment costs

TEXTILE FIBER CONSUMPTION BY GRADE

Textiles is a 575 billion USD industry with approximately 3.5 - 4% average annual growth. Viscose fiber is a small part of the total and is most dependant on economic growth fashion trends and cotton availability/pricing. The major change in textile fiber consumption over the past 30-40 years has been the growth in synthetics.



Source: Oerlikon textile, Pöyry estimates

TURNAROUND DRIVEN BY TEXTILES

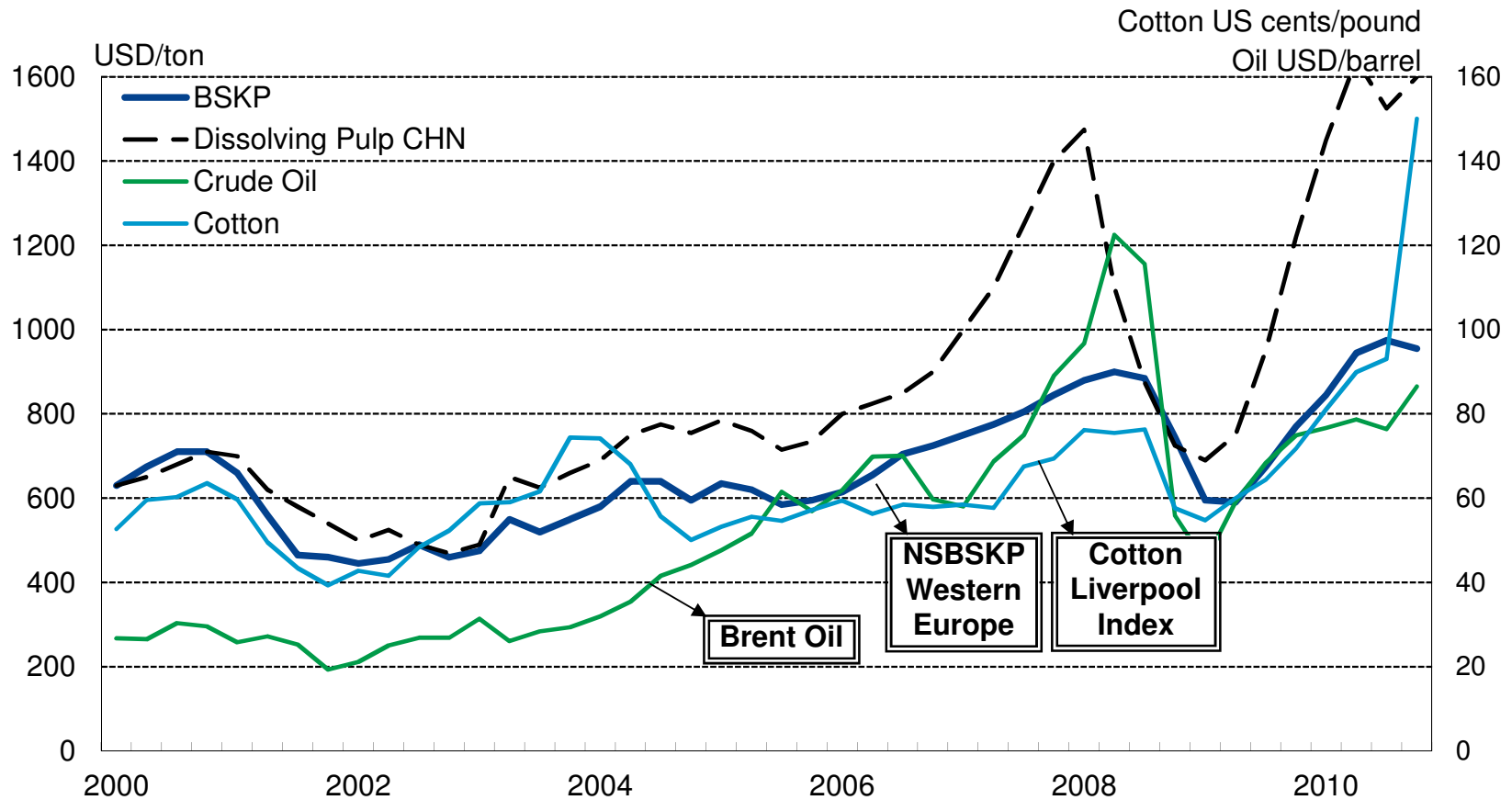
Fiber Consumption in the Textile Industry

Fiber Type	Synthetic (oil)	Cotton	Other Natural	Viscose	Total
Million tonnes	41	24.5	1.5	3	70
%	59	35	2	4	100

- The low share of viscose fiber of the total fiber volume used in textiles means that if viscose replaces 1% of synthetic fiber, dissolving pulp demand goes up by nearly 11% and if viscose replaces 1% of cotton, nearly 6% more dissolving pulp is needed.
- **Substitution has been the most important driver over the past few years.** The biggest change has been seen in the interplay between cotton and viscose due to the recent drop and future limitations in cotton supply. **The main benefit of viscose versus cotton is better security of supply due to its apparent immunity to seasonal weather conditions and predictable capacity of supply.**
 - Spinning and other techniques needed in textile production have been developed to allow more cotton/viscose blends. Most of the substitution has taken place in these blends through a gradual introduction of higher shares of viscose fibers in those applications where the special features of dissolving pulp based fibers can be utilized.

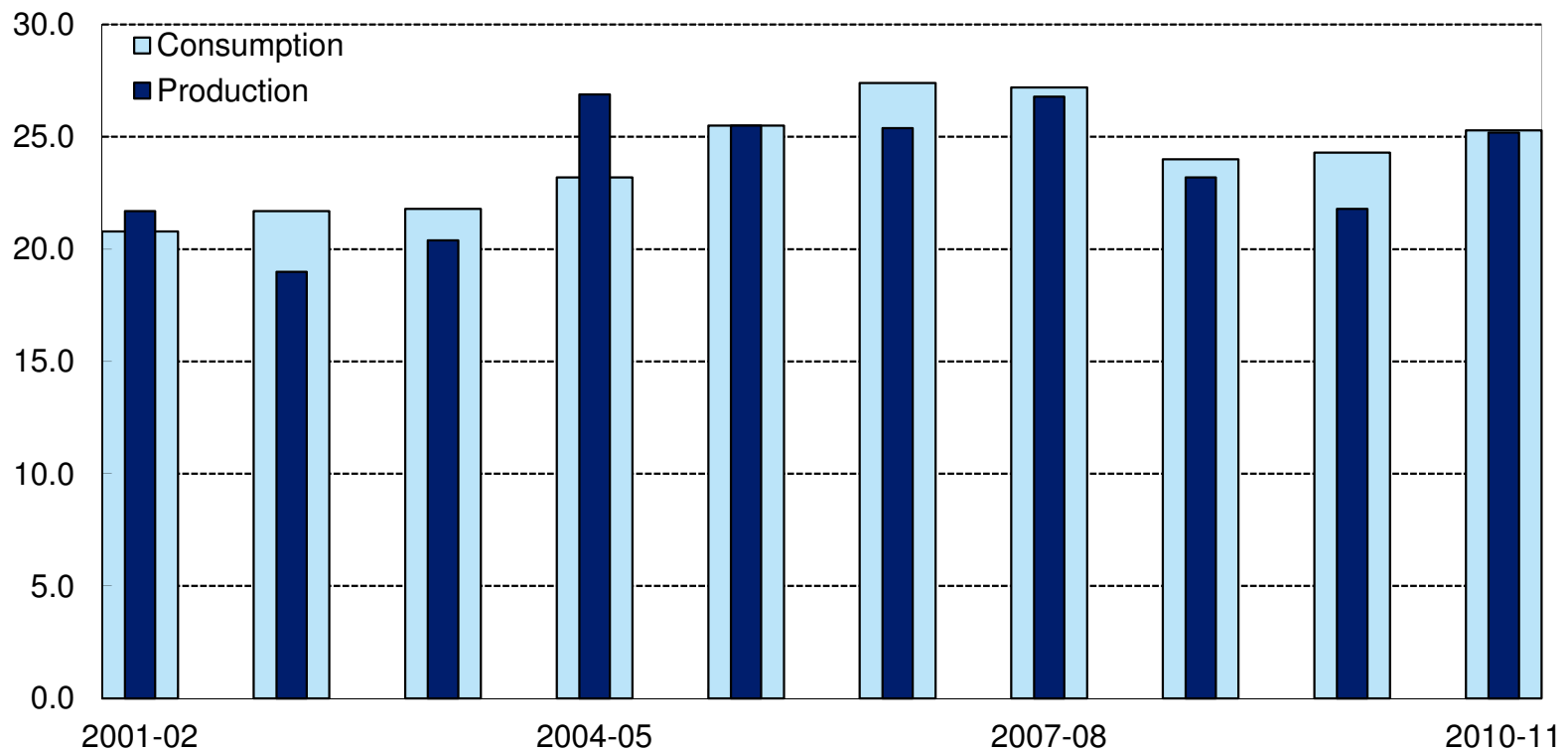
NOMINAL PRICE CORRELATIONS 2000-2010

Dissolving pulp prices in China vis-à-vis BSKP, cotton and oil prices in 2000-2010. The link between cotton and dissolving pulp prices has strengthened over the last several years. Small changes in cotton supply result in large changes in DP demand.



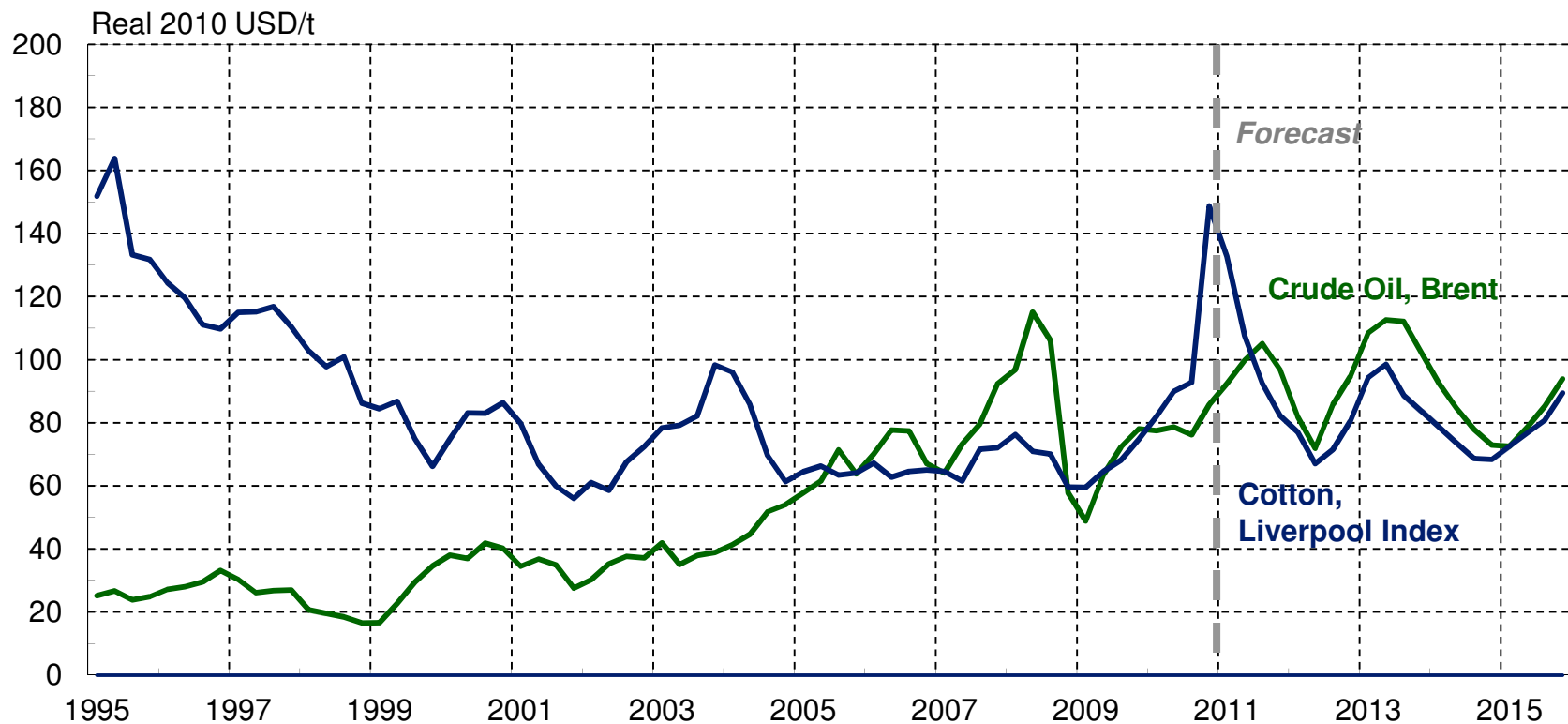
COTTON PRODUCTION AND CONSUMPTION

After several years of consumption exceeding production, stocks were very low, lowest level in 14 years. In 2010/2011 cultivation area estimated up by 9%, production 16% and consumption 4%. Which means a further small decline in stocks.



OIL AND COTTON OUTLOOKS

High cotton price drives up cultivation area in 2011-12 season – weakening demand/supply and prices from Q2/2011. The International Cotton Advisory Committee (ICAC) foresees the cotton acreage to be reduced from historical trend of 33 million hectares to 32 million hectares by 2020, however yield improvements will result in marginal production increases.



* Crude Oil Brent, USD/barrel.

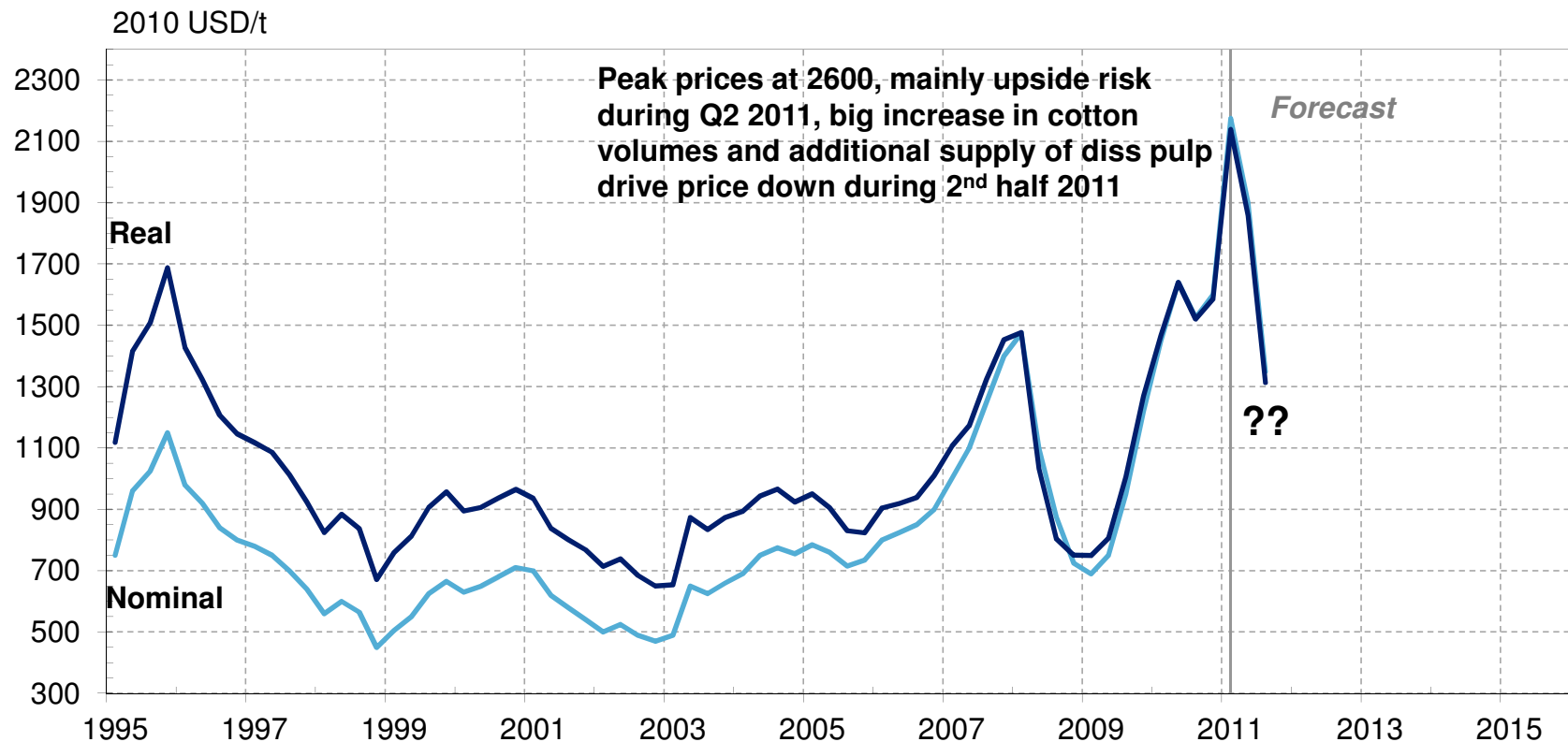
** Cotton Liverpool Index, US cents/pound.

HOW WILL IT ALL END?

- Demand outlook for textile growth over the decade at 2+%/yr is significant. Much of the demand growth will be taken by synthetics.
- However market demand is strong enough to allow the balance of supply (natural and viscose fibers) to increase, although by a smaller proportion than synthetics
- The **supply constraints of cotton are serious** and the supply forecast for 2020 by ICAC would allow only a marginal growth of cotton. This would allow cotton to capture only a small portion of core demand growth leaving viscose fibers a significant market opportunity in substitution.
- The **demand outlook for dissolving wood pulp based viscose is attractive, yet volatile** to development of cotton supply and general market development. Assuming a slightly pessimistic or optimistic general market outlook for textile fibers would have a significant impact on the viscose market opportunity.

WHAT DOES THIS MEAN FOR DISSOLVING PULP PRICES?

Sharp upturn from mid 2009, due to economic recovery, cotton shortages and high commodity prices in China. Peak price of \$2600 in May; July-Aug fall-off to \$1150-1200, Sept pricing back up a bit (high season for textile business)
With robust demand outlook and swings in supply (both cotton crops and new DP capacity), expect continued volatility



* Prices in China CIF or C&F; Deflator used for real prices US WPI.

Thank You !



CONTACT:

NAME: GORDON FLOE

MAIL: Gordon.Floe@Poyry.com

PHONE: 604-443-1014