Fibers Update - 2019

SYFA – Charlotte, NC

November, 2019

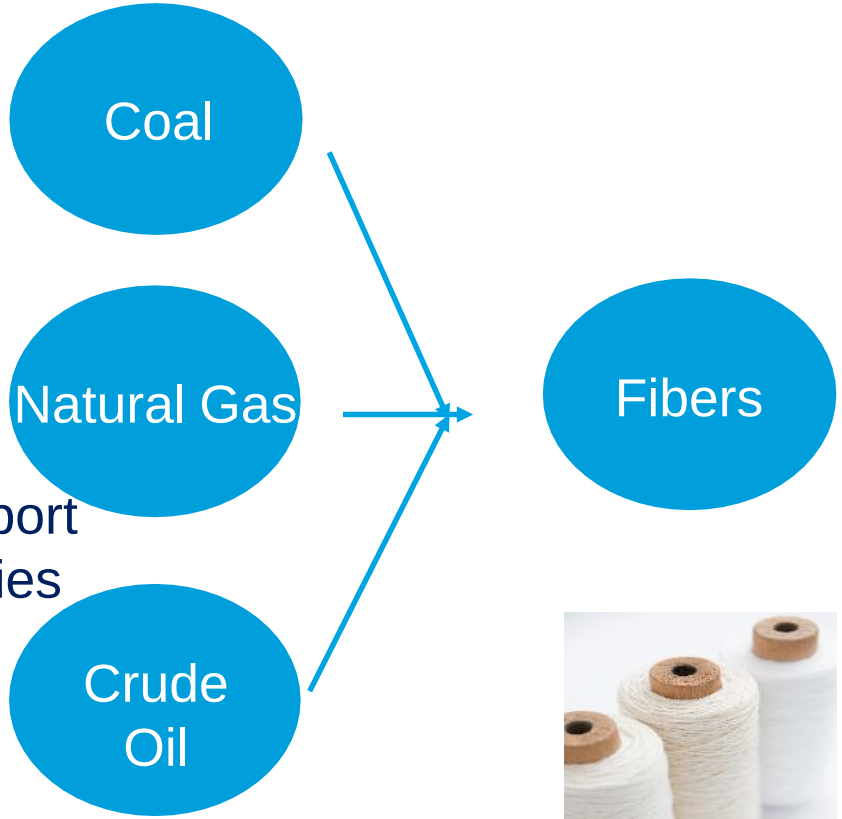
Laura Murphy, Fibers Research Director

Agenda

- Wood Mackenzie Background
- Raw Materials and the Supply Chain
  - Nylon
  - Polyester
- Global Views
- Recycling Overview
- Summary

Wood Mackenzie Chemicals

- Verisk Analytics (NASDAQ:VRSK)
- Was PCI (Alasdair Carmichael)
- Services:
  - Asia Weekly
  - Global Monthly
  - Technical Fibers Monthly
  - Annual global supply demand report
  - Special-request reports and studies
  - Raw materials



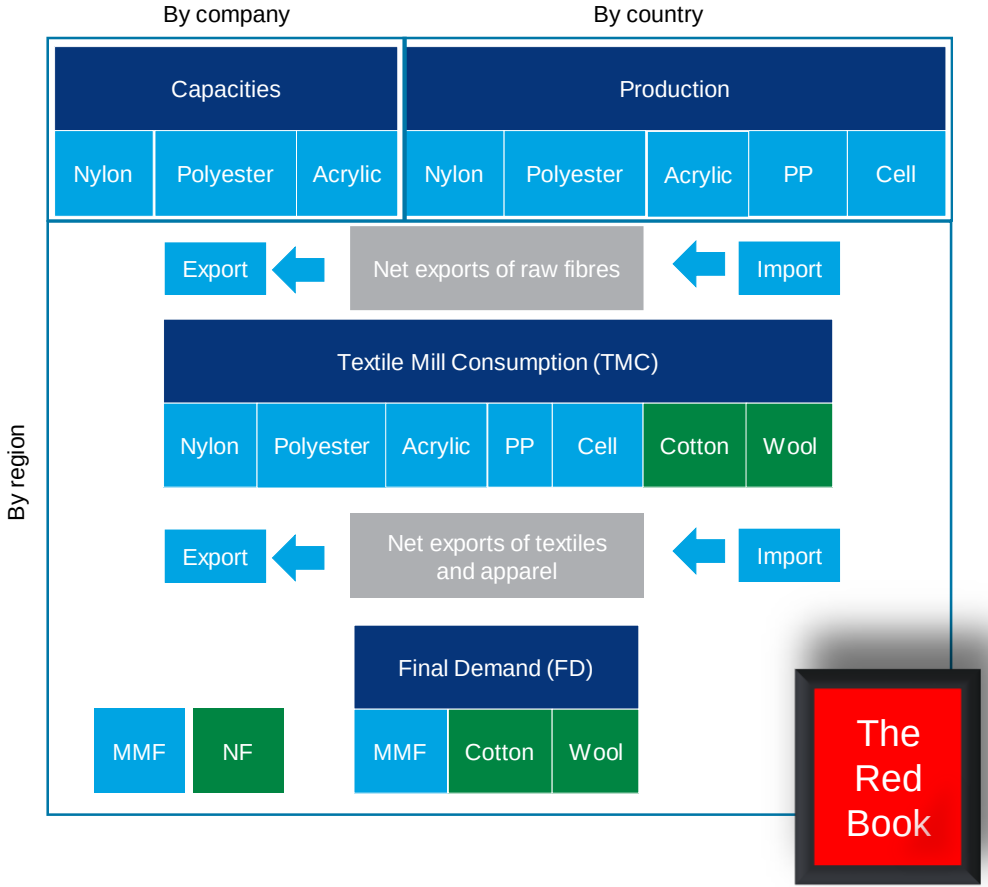
Annual Fibers Global Supply Demand Report

Overview

Explore and evaluate trends and growth opportunities in the global fibres industry with our comprehensive overview of supply and demand trends in this annual Global Supply Demand Analytics Service. Whether you are a business analyst, marketing director, sourcing executive or product manager, use our detailed database to understand where growth opportunities lie and to compare the outlook for different fibre types.

Data provided (1990-2030):

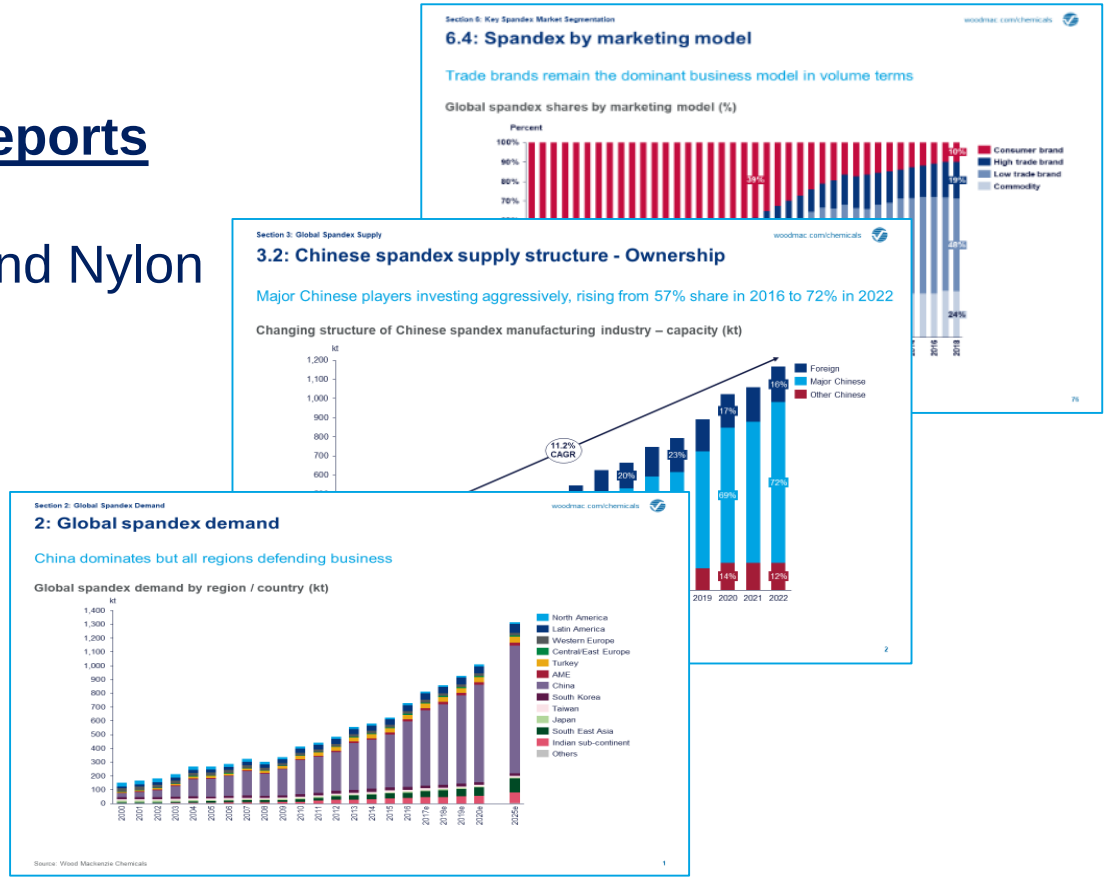
- Capacities by company per country for nylon, polyester and acrylic.
- Production by country for acrylic, nylon, polyester and by region for polypropylene, cellulosics
- TMC by region for MMF, cotton and wool (PP break before 2005)
- FD by region for MMF, cotton and wool (2007 onwards)



Wood Mackenzie Chemicals

2019 Global Specialty Reports

- Spandex
- Airbag – Polyester and Nylon
- HMLS Tire Cord
- Nylon 66 Tire Cord



Dunning – Kruger Effect

Dunning – Kruger Effect

“Cognitive bias where people mistakenly assess their cognitive ability as greater than reality”

Dunning – Kruger Effect

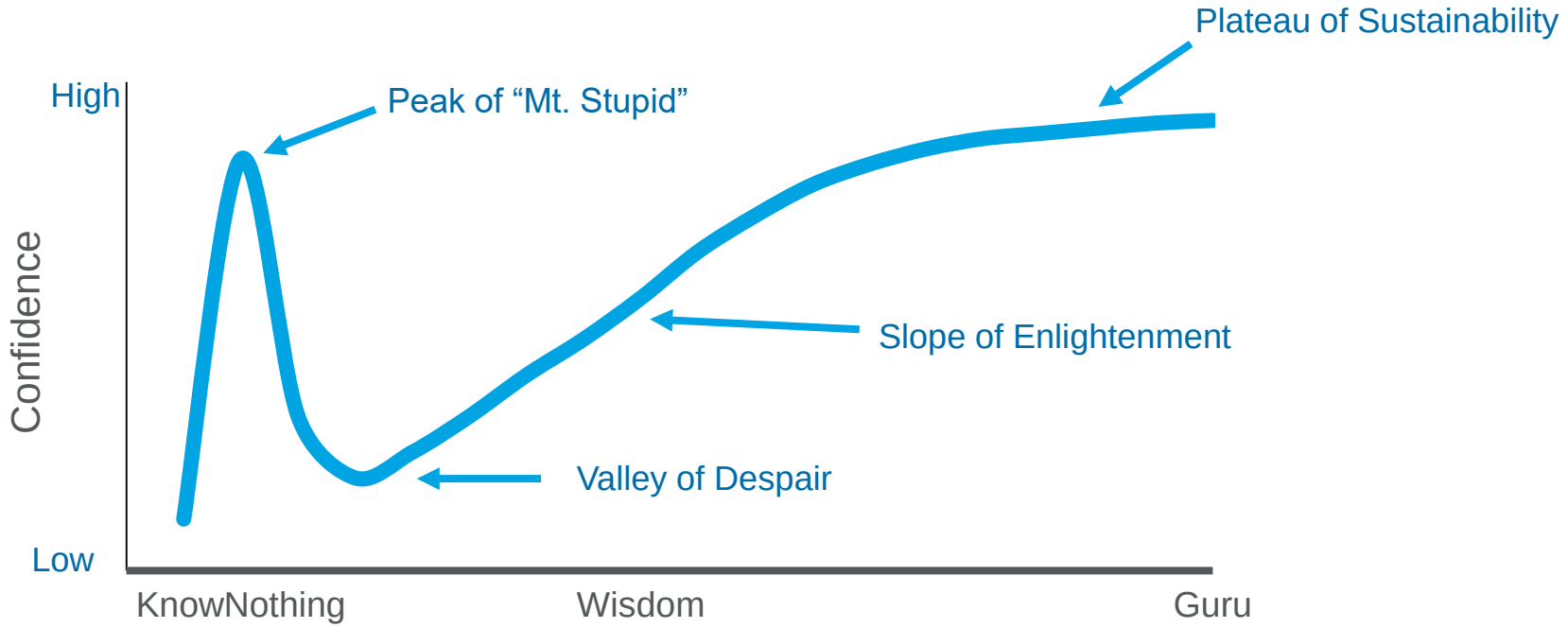
"Cognitive bias where people mistakenly assess their cognitive ability as greater than reality"

"I aced that test!

D

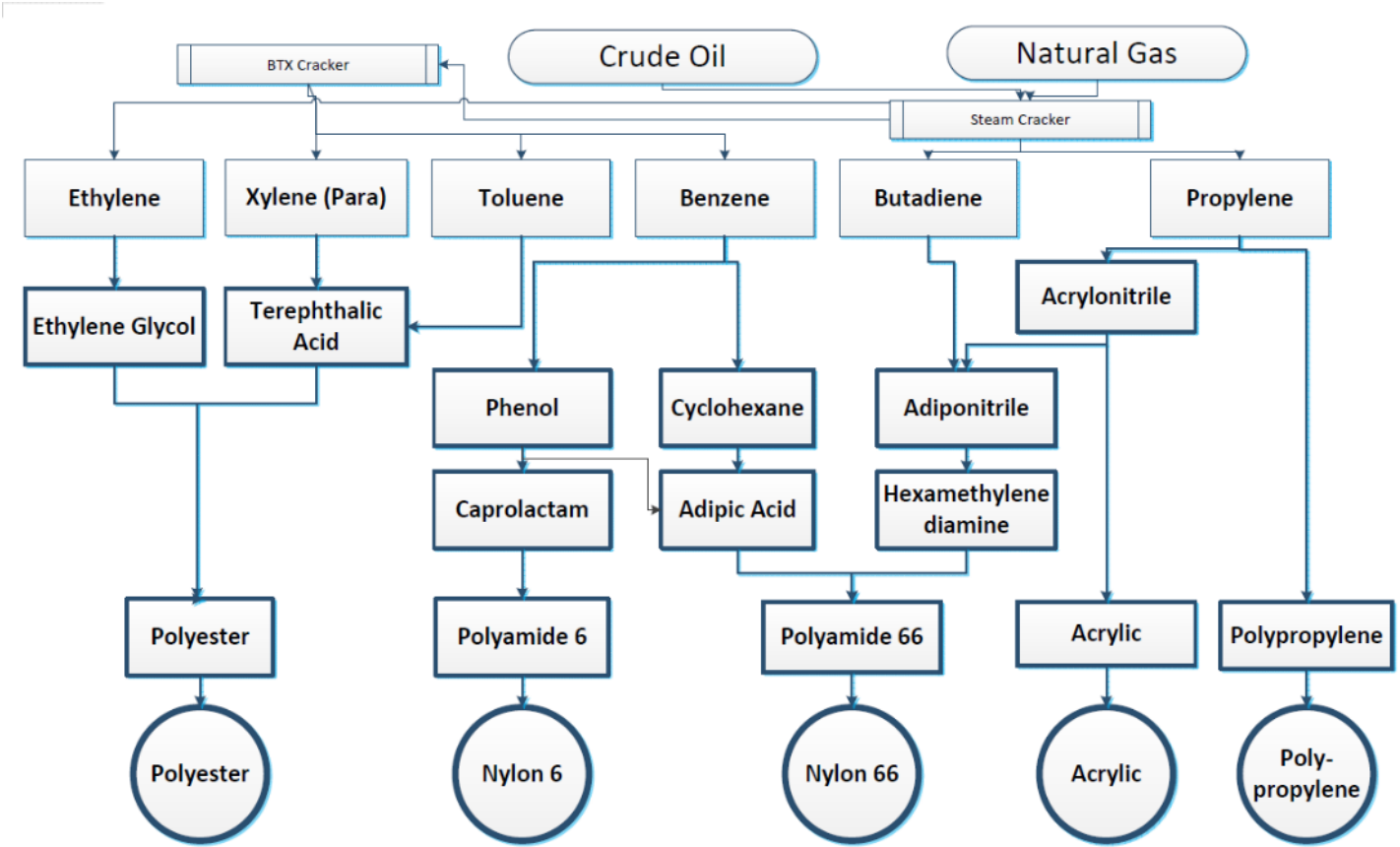
Dunning – Kruger Effect

"Cognitive bias where people mistakenly assess their cognitive ability as greater than reality"

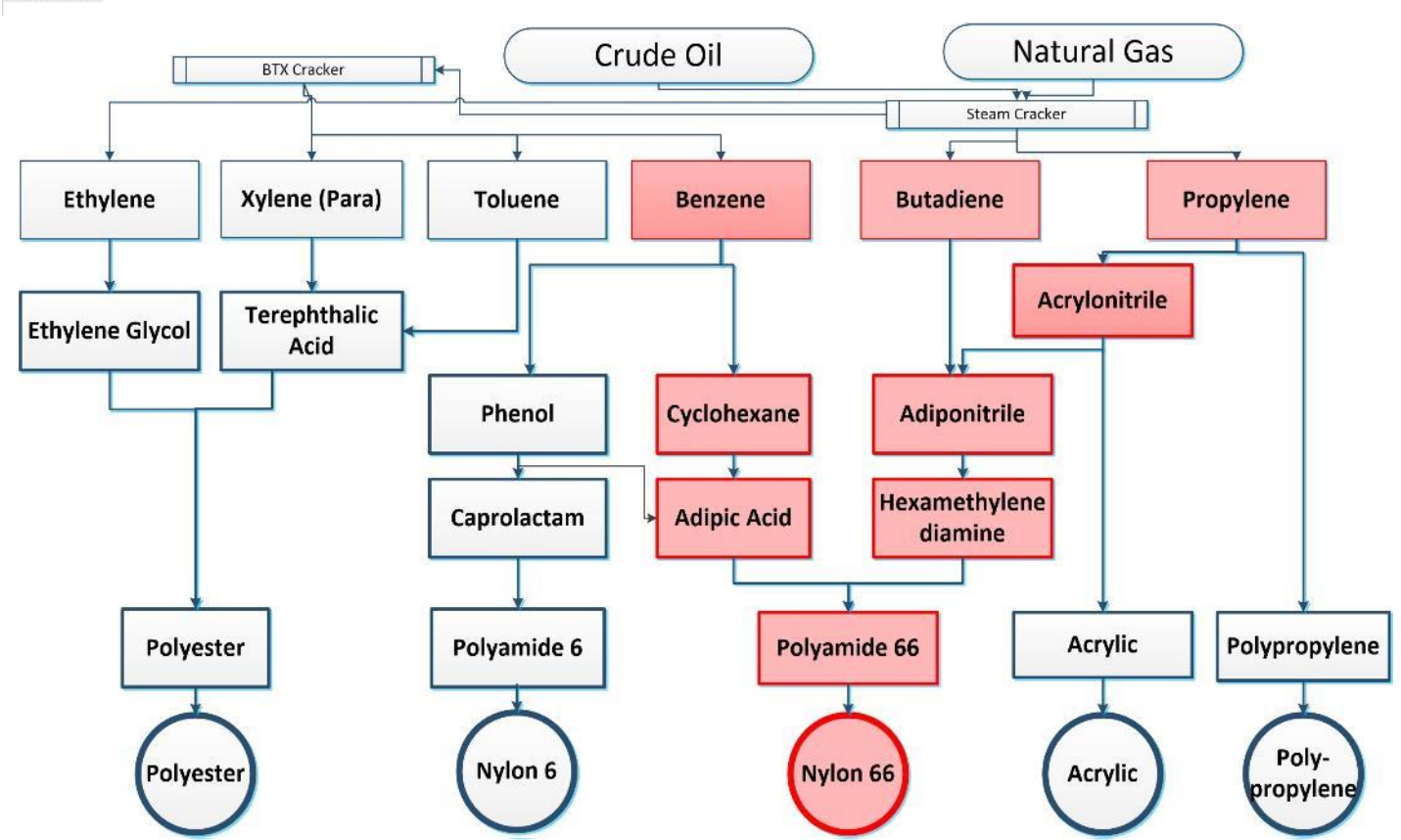


Raw Materials

Synthetic Fibers Raw Materials – Petrochemical Route

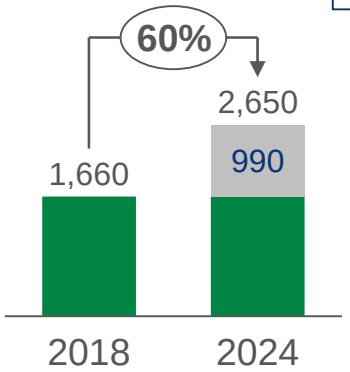


Synthetic Fibers Raw Materials – Nylon 66



ADN Capacity

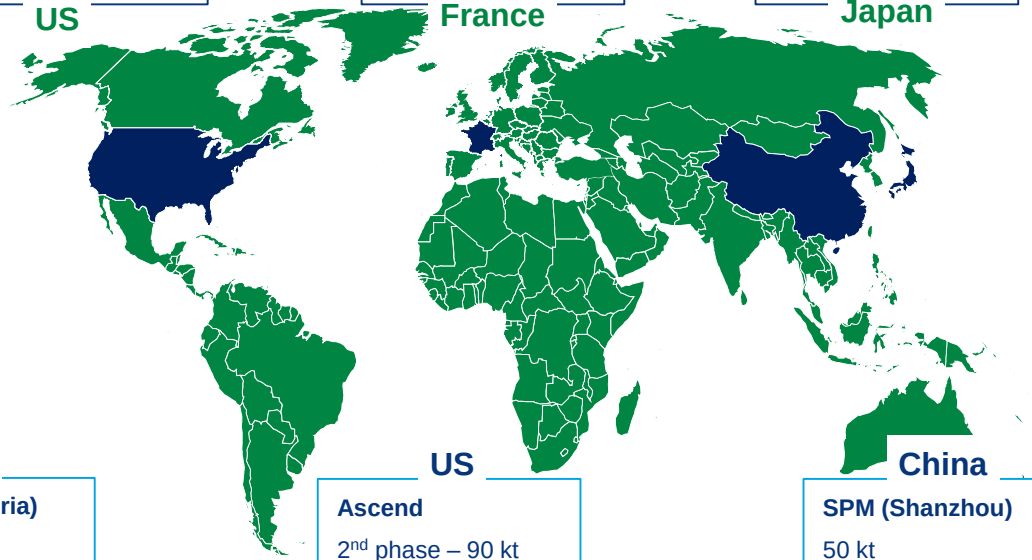
Current



US
Invista (2) + Ascend
735 + 360 kt

France
Invista / Solvay (to be Invista / BASF)
520 kt

Japan
Asahi Kasei
45 kt



Future?

France
Invista/Solvay
100 kt +/-20
2019

US
Invista (Victoria)
60 kt +/-20
2020

US
Ascend
2nd phase – 90 kt
2022

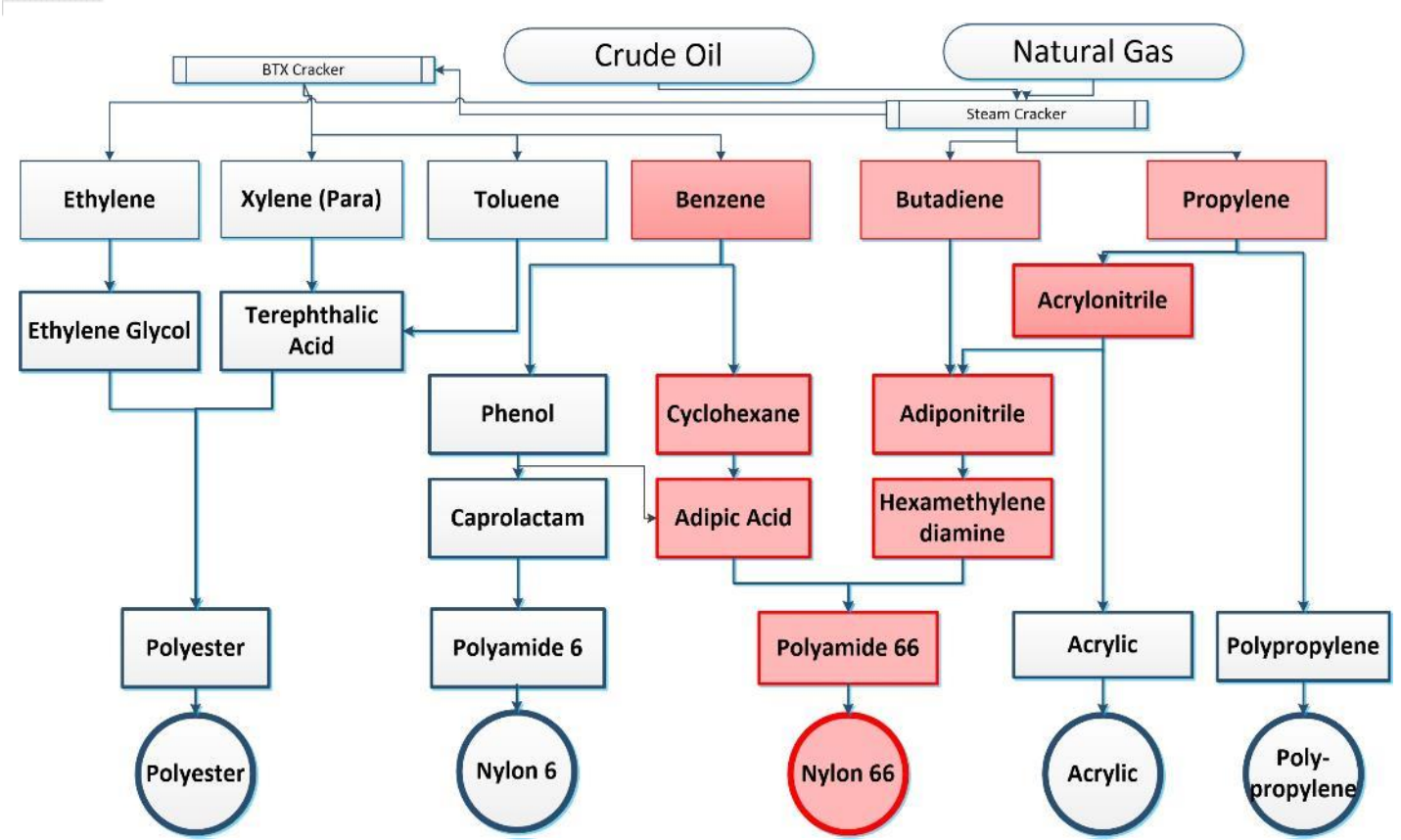
China
SPM (Shanzhou)
50 kt
2023?

US
Ascend
1st phase – 90 kt
2020

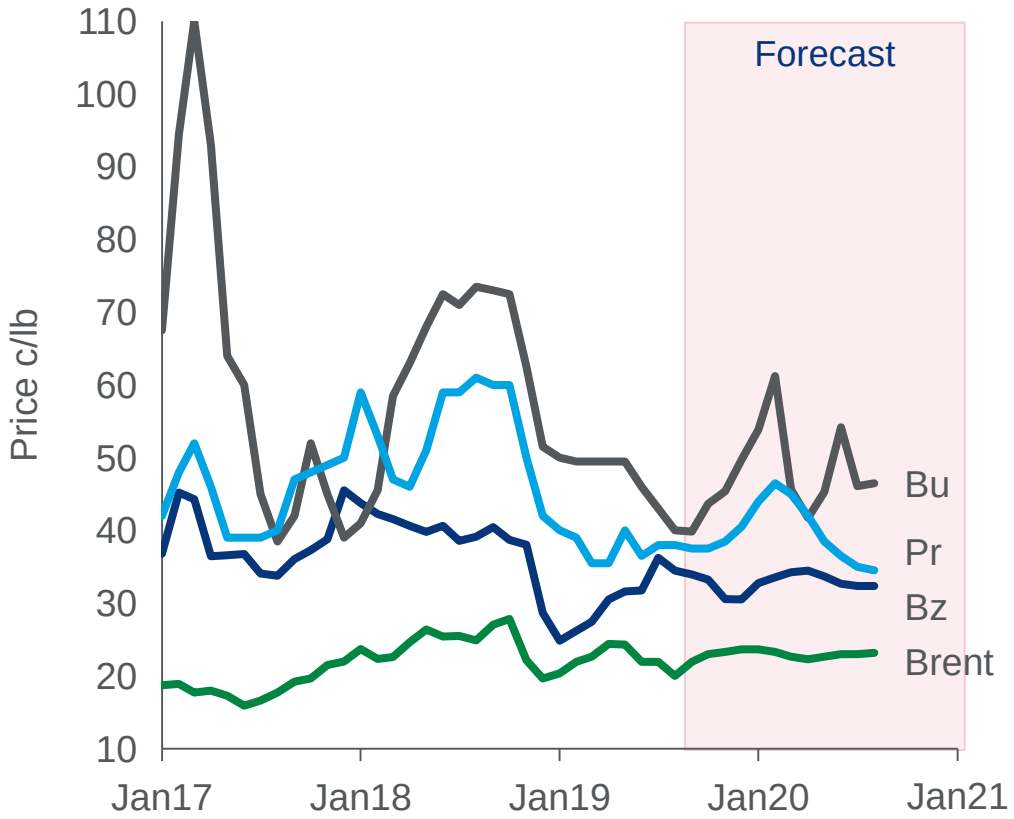
China
Invista (Shanghai)
400 kt
2022

China
Tianchen Qixiang
200 kt
2023

Synthetic Fibers Raw Materials – Nylon 66



Oil, Benzene, Propylene, Butadiene: Prices and forecasts



Source: Wood Mackenzie Chemicals

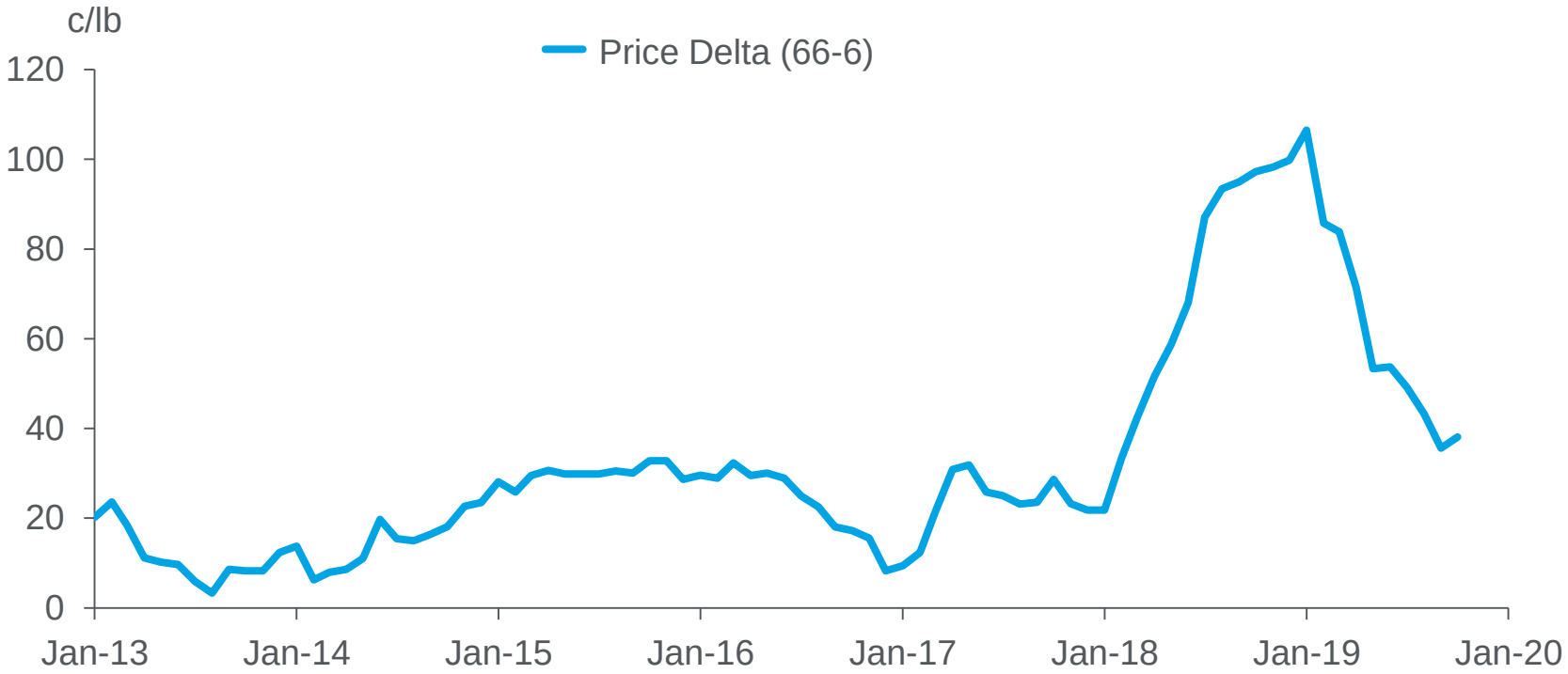
Bu: A seasonal decrease followed by a volatile period is likely in 1H2020.

Pr: A rebound is likely later in the year due to improved demand and decreasing inventories.

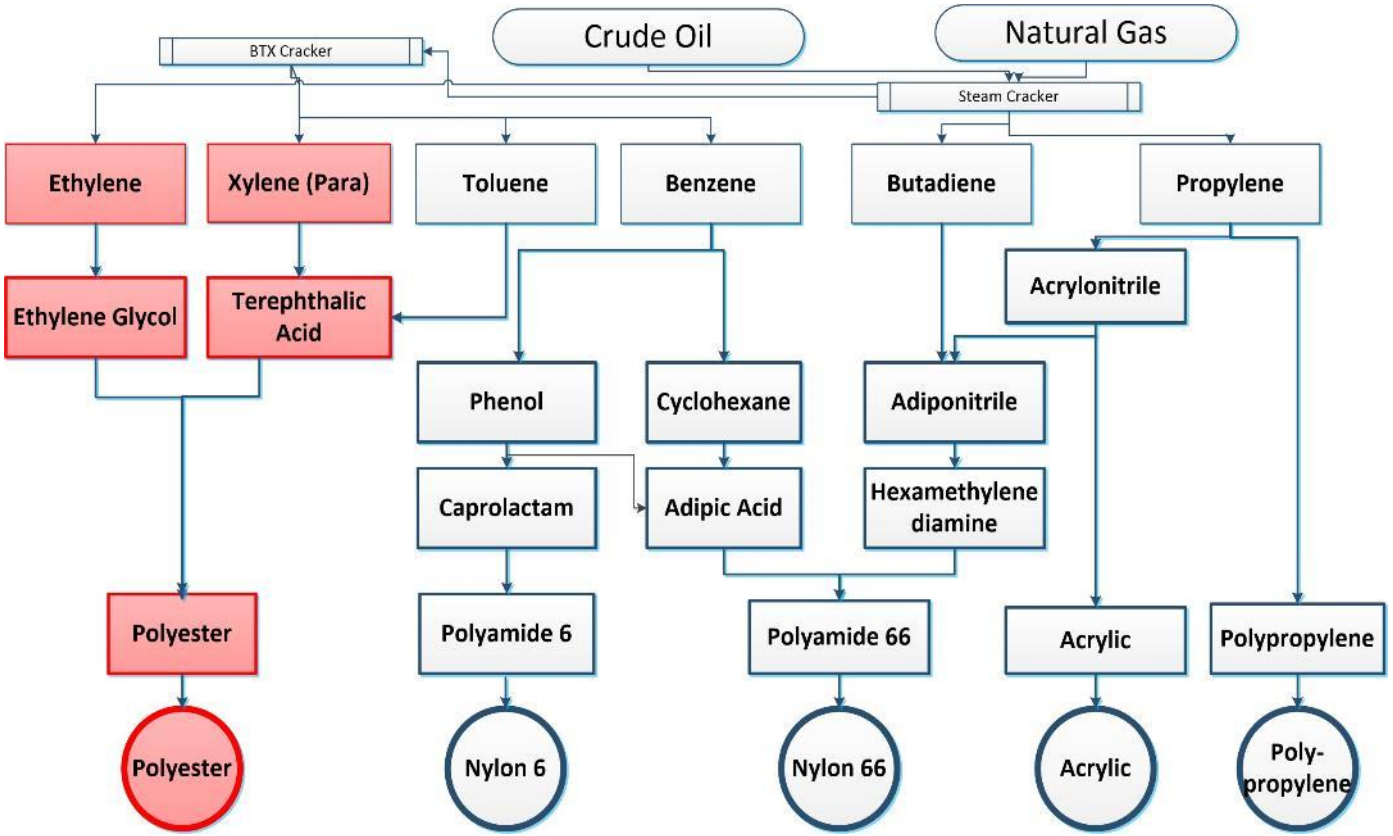
Bz: A The prices should stabilize close to the level of 34 c/lb. The price in the US may increase in 1H2020, but short-term downward movement is more likely.

Brent Oil: Mostly within $65-70/bbl Brent in the next 12 months, with short-term volatility likely.

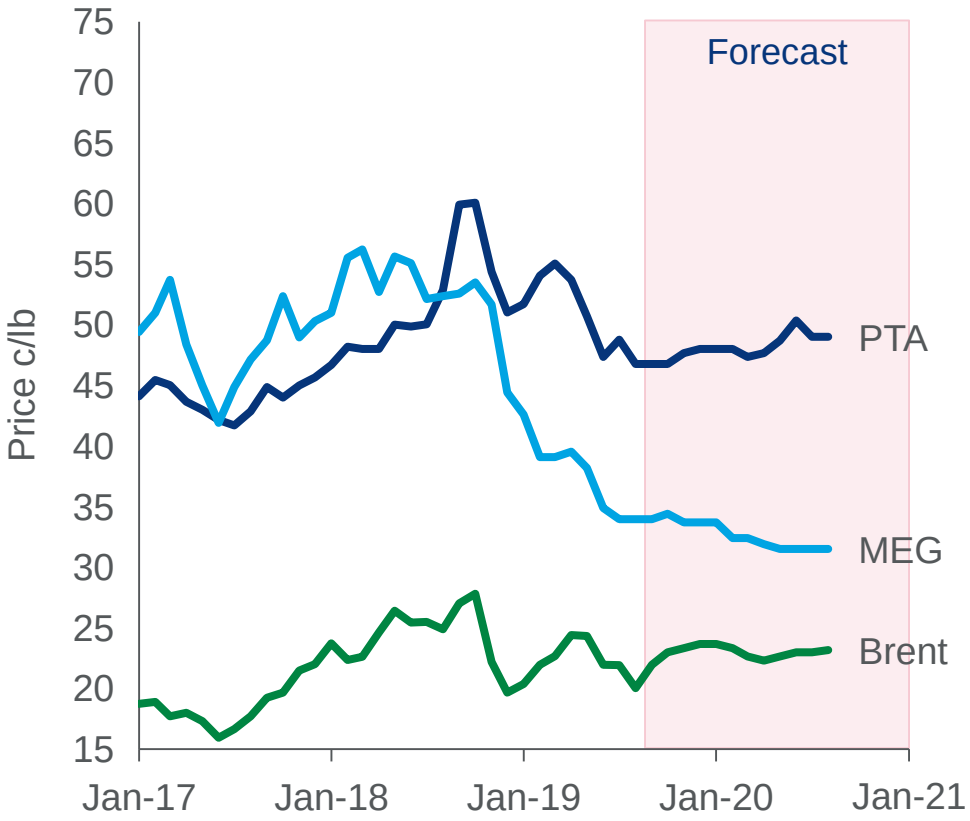
PA 66 vs 6: Polymer prices



Synthetic Fibers Raw Materials - Polyester



Oil, PTA, MEG: Prices and forecasts



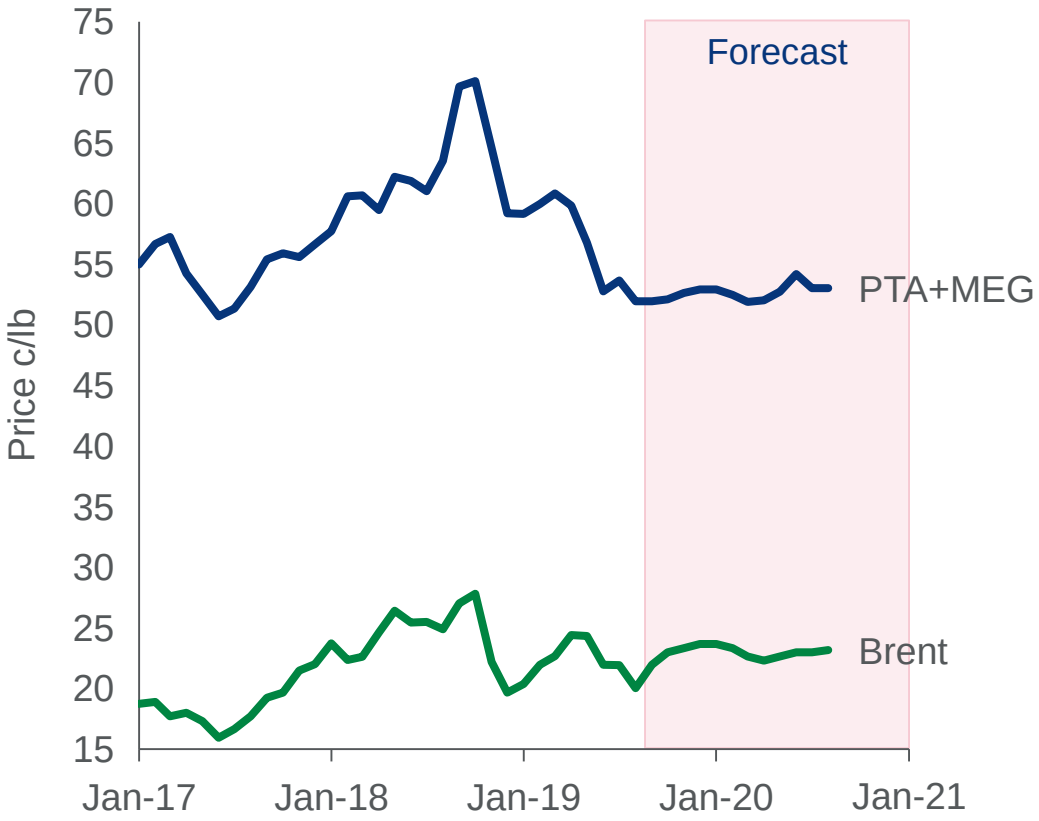
Source: Wood Mackenzie Chemicals

PTA: US PTA prices forecast is for steady prices in early Q4 2019, new capacity of PX in China will keep PX prices stable, with some seasonal fluctuations.

MEG: A buyer's market into 2020 with new capacities coming on stream will keep prices in check.

Brent Oil: Mostly within $65-70/bbl Brent in the next 12 months, with short-term volatility likely.

Oil, PTA+MEG: Prices and forecasts



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Polyester Supply

M&G bankruptcy 2017

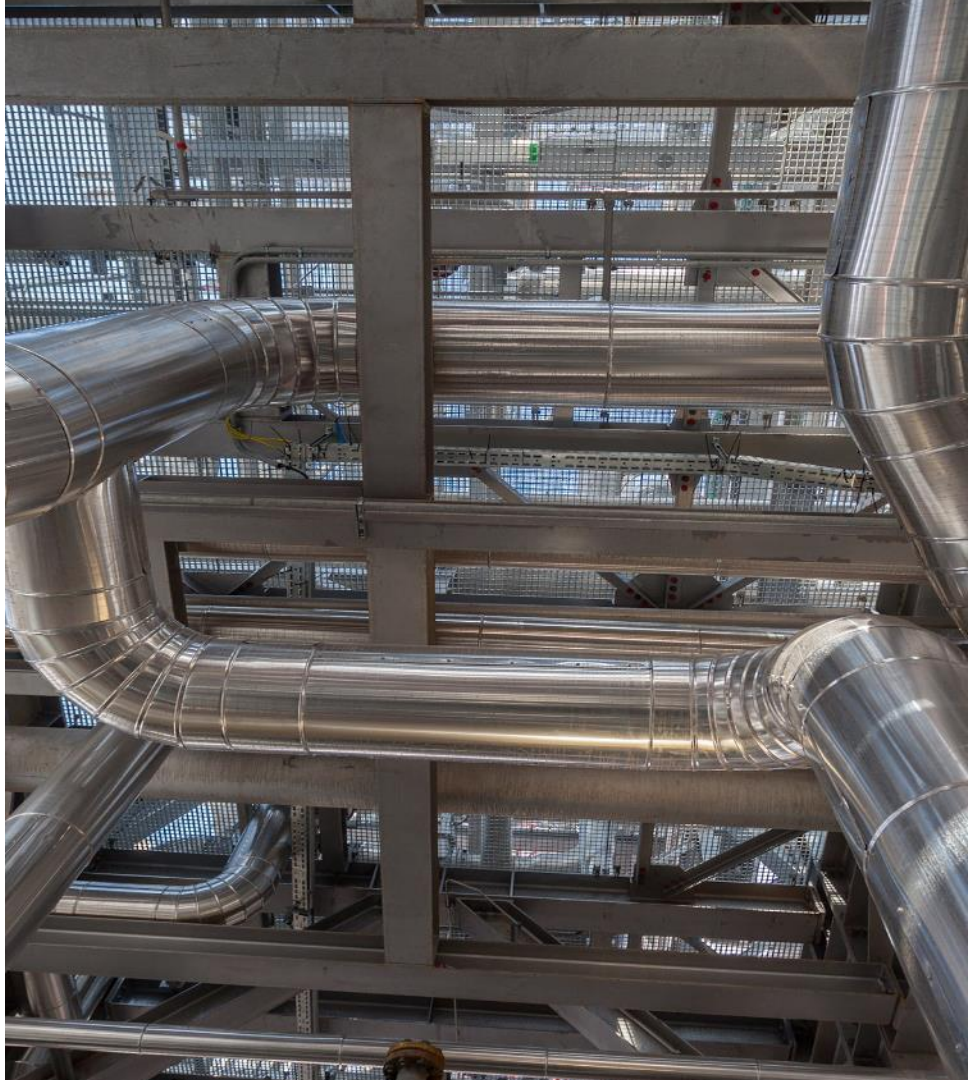
DuraFibers bankruptcy 2017

Corpus Christi new PTA and PET plant halt for 18 months

Forces majeure – hurricanes and fires, production issues and delays

Antidumping / Countervailing cases – Resin, staple, filament

China Tariffs – Yarns, fabrics, apparel



Polyester Supply

Huvis / Indorama JV for low melt in Spartanburg

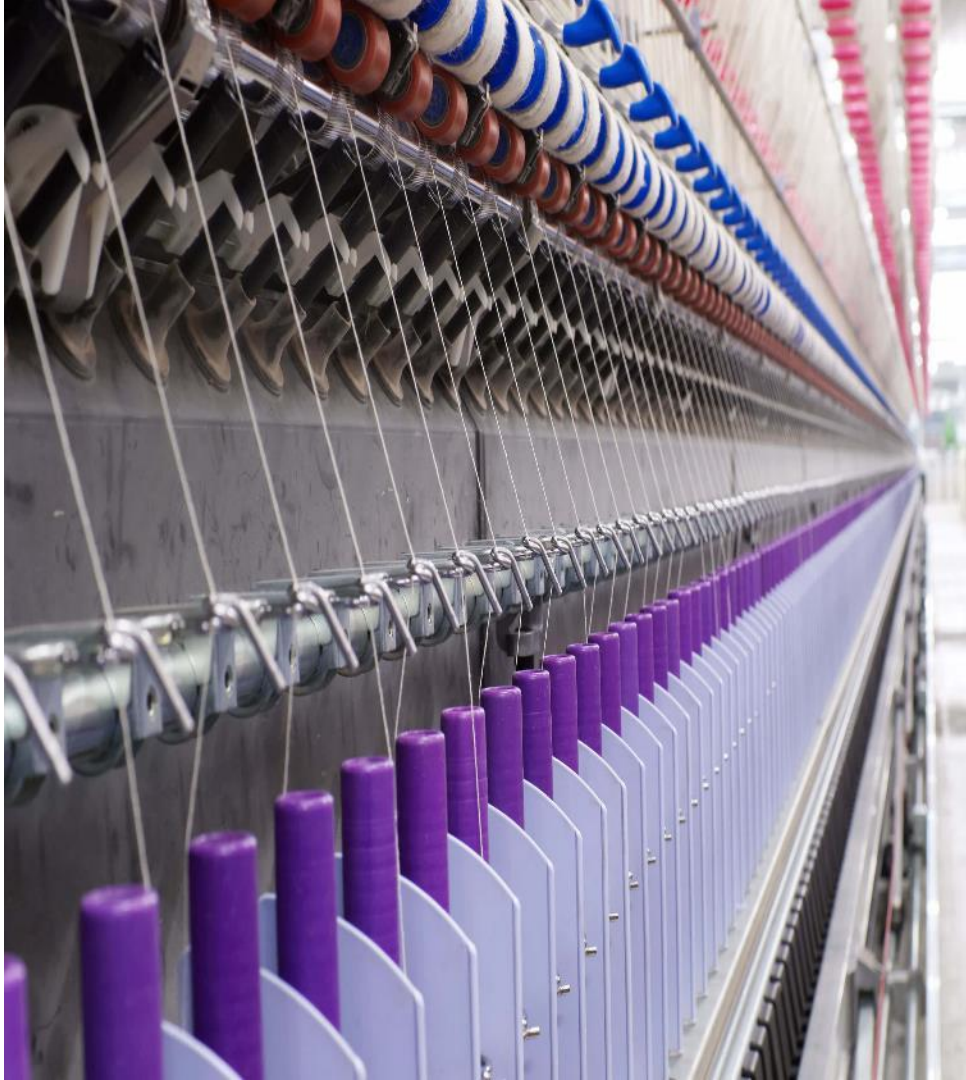
SANS, PHP, Premiere: New production of industrial filament

Indorama, Alpek, and Far Eastern JV for Corpus Christi

Far Eastern purchase of M&G's Apple Grove resin plant

Investment in recycling and new technology – Ciclo / Loop

China Tariffs – Yarns, fabrics, now apparel



Recent US Antidumping / Countervailing Suits on Polyester Supply Chain

PET Resin

- ADD + CVD
- Filed 3/2015:
- Canada, China, India, Oman
- ADD (Filed 9/2017) Brazil, Indonesia, Korea, Pakistan and Taiwan
- 5 - 276%
- Dismissed (10/2018) on Brazil, India, Korea, Pakistan, Taiwan

Fine Denier Staple

- ADD + CVD
- Filed 5/2017:
- China, India, Korea, Taiwan,
- 0 – 220%
- Spared: Toray - Korea and Tainan Spinning –Taiwan

Low Melt Fibers

- ADD
- Filed 6/2017:
- Korea and Taiwan
- 0 - 52%
- Spared: Huvis - Korea

DTY Filament

- ADD + CVD
- Filed 10/2018: China, India
- 4/2019 – Critical circumstances (retroactive), CVD up to 460%
- 6/26/19 – Prelim. DOC China AD – 77% max, India: 36% max

Some World Views

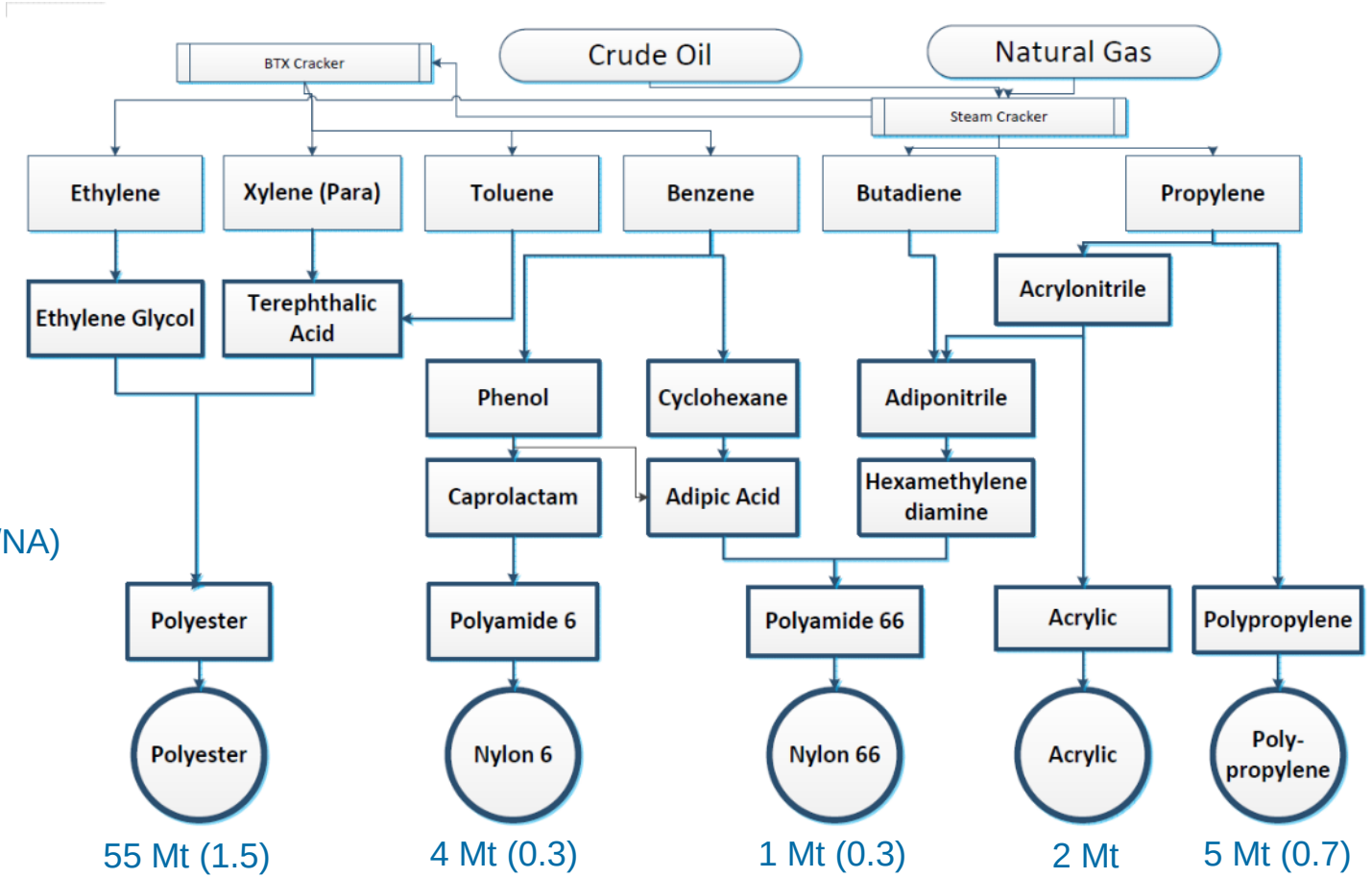
Estimated 2018 global fibre demand

100 Million Tons

(220 Billion Pounds!)

Source: 2018 Wood Mackenzie Annual Global Fibers Supply Demand Report

Synthetic Fibers Raw Materials – Fiber Production 2018



Global (US/NA)

Cotton

27 Mt (4.2)

Cellu-losics

6 Mt (0.1)

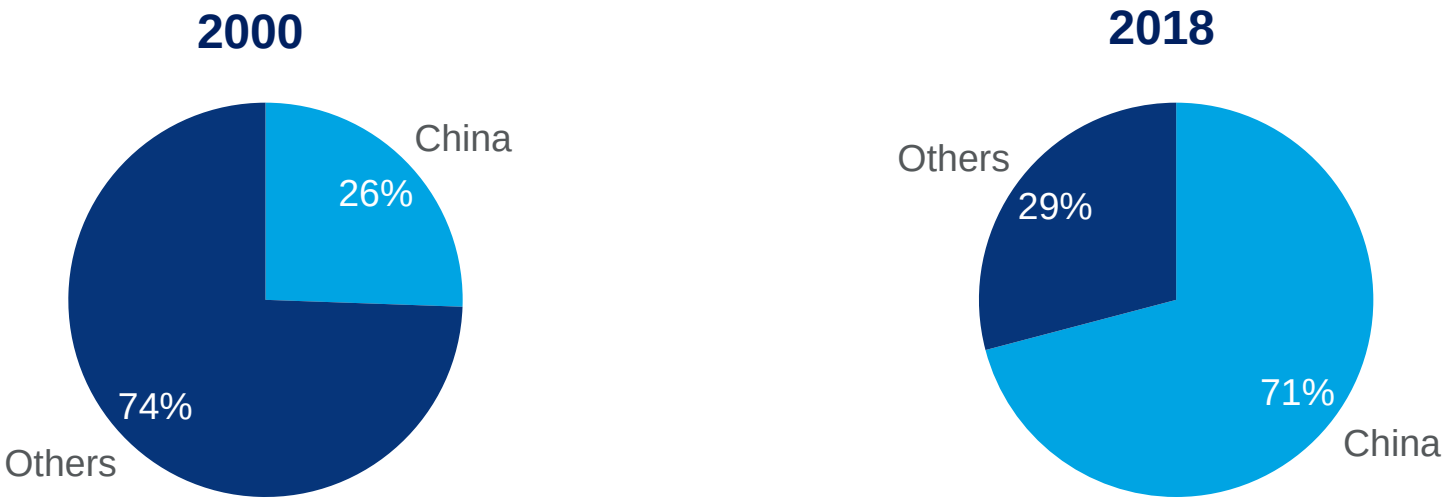
Wool

1 Mt

Global Polyester Production

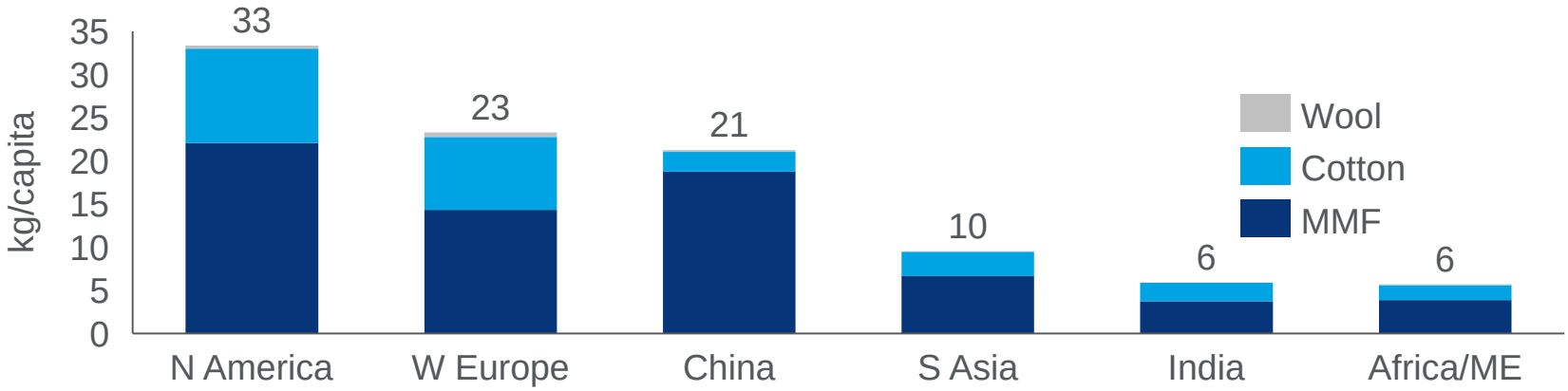
China jumps from 26% of global polyester production in 2000…….

… to 71% in 18 years



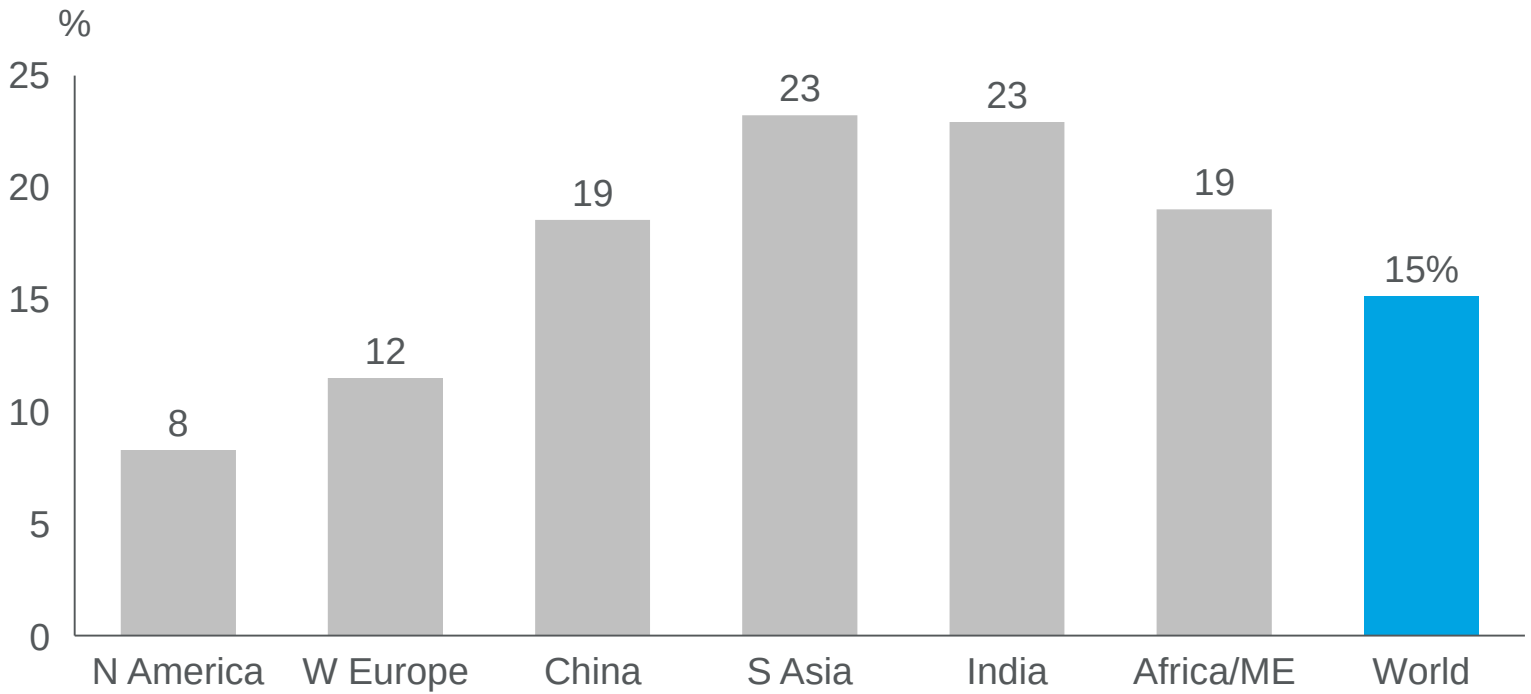
Source: 2018 Wood Mackenzie Annual Global Fibers Supply Demand Report

Regional differences in fiber consumption, 2018



Source: 2018 Wood Mackenzie Annual Global Fibers Supply Demand Report

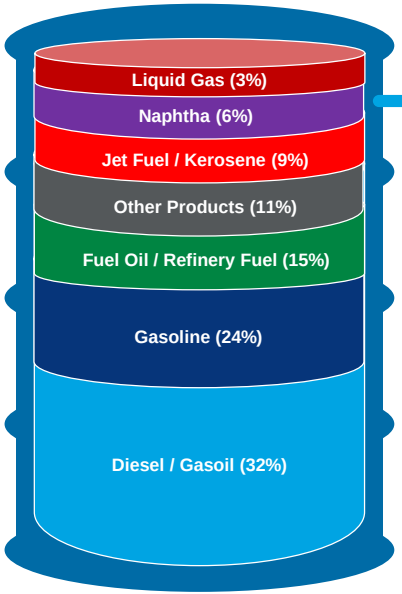
Regional 5-Year Change in Fibre Demand, 2019-2024



Source: 2018 Wood Mackenzie Annual Global Fibers Supply Demand Report

Sustainability, Pollution, and the Circular Economy

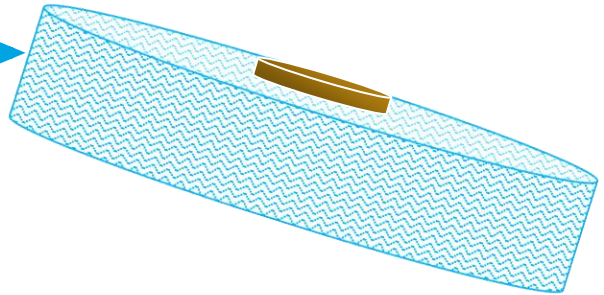
Oil to Synthetic Fibers – What's the impact?



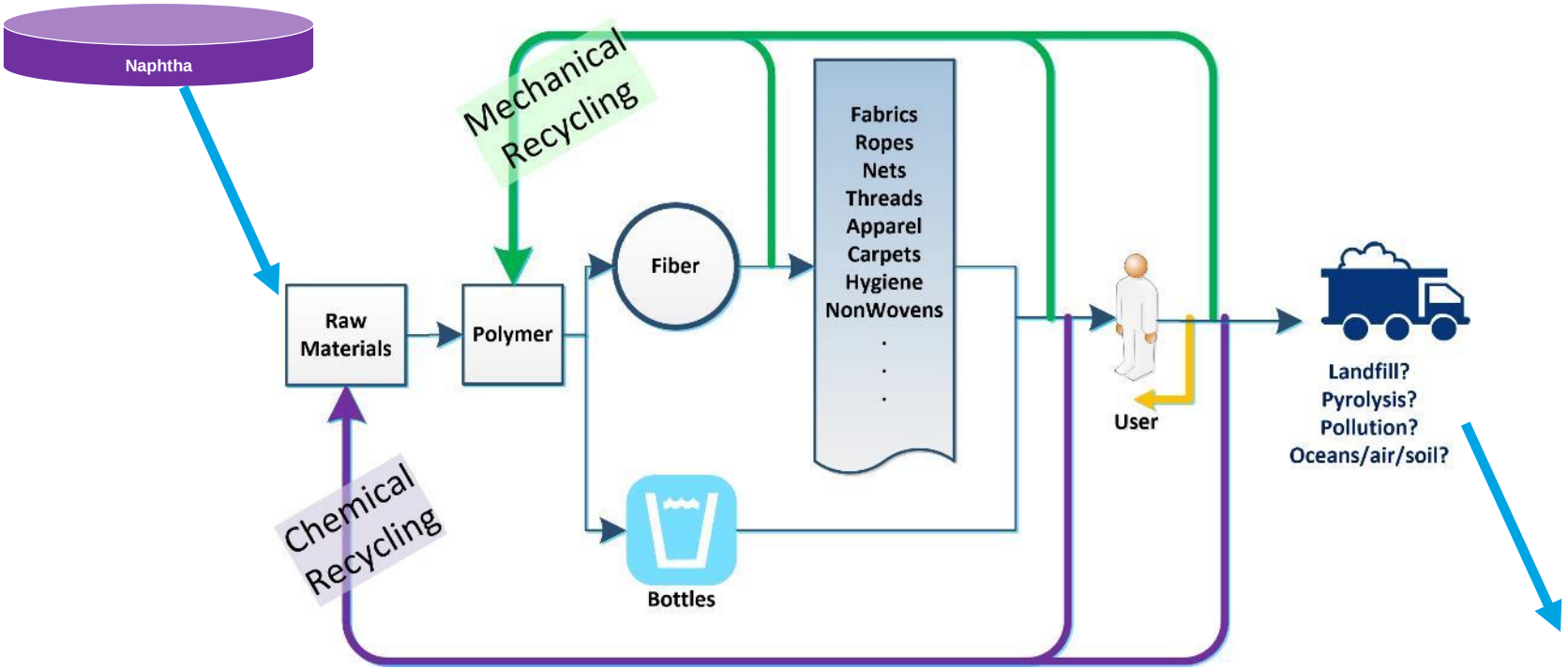
13% of Naphtha to Synthetic Fibers

Or

0.8% of oil



Recycling of Synthetic Fibers – What's the impact?



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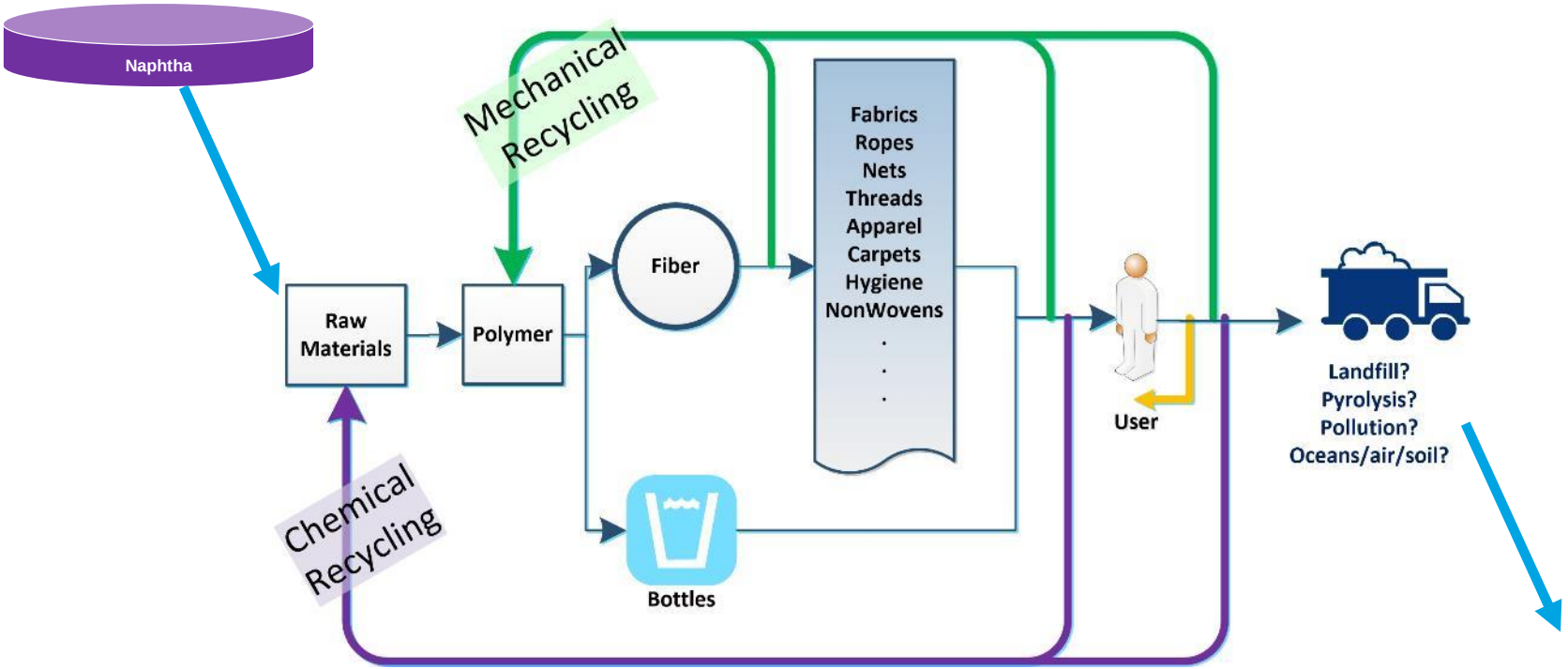


Some Sustainability Targets

2017

Today: 714 kt recycled bottles / 29% of total used in US

(Almost half go to fiber applications)

2025

Pepsi – 45% recycled content

Walmart – 20% recycled brand name content

Unilever – 50%

Nestle Waters – 50%

Colgate – 25%

Textile Exchange – 25%

Volvo – 25% content

2030

Coca Cola – 100% packaging, 50% bottles (uses 3 million tons globally)

Pepsi – 100% (50 kt)

P&G – 100% Recyclable

Ikea – 100% Recyclable

Lego – 100% recycled or plant-based

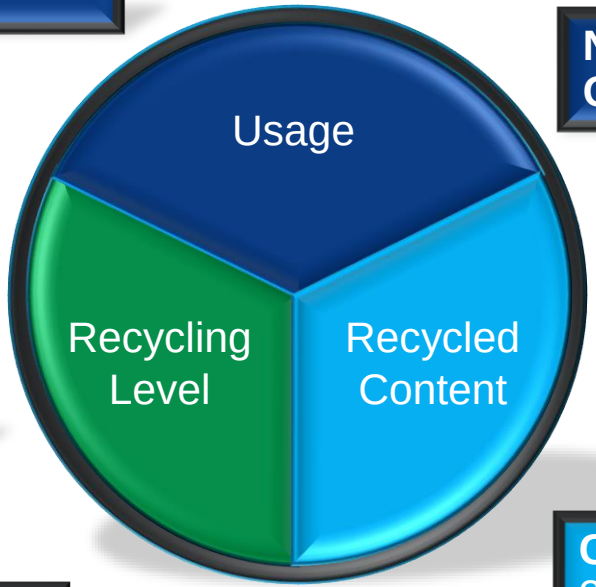
Danone – 100% recyclable / 25% content

Some Government Mandates

No single use plastic bags (CA, NY, HI…)

No plastic straws (municipalities around the US)

No plastic water bottles (SFO, Grand Canyon)



California carpet:
2020 - 24%
2023 - 27%

Illinois carpet:
2022 – 35%
2023 – 45%
2024 – 55%
2025 – 65%

Illinois carpet:
2023 – 15%

California bottle:
2021 - 25%
2025 – 50%
2030 – 75%

Some Recycling Targets – what does it mean?

2020 - 2030: The Bottle Wars

- rPET demand grows 3x from 2018 for bottles only
- Bottlers will begin reserving rPET supply to meet government and brand needs
- PET resin producers will need to restructure themselves to meet the demand – by expanding rPET footprint and rationalizing old vPET capacity
- rPET premium – 10 c/lb over virgin now

- Fibers will not be able to depend on bottles as a recyclate source
- New, closed-loop fiber recycling systems needed

Do you recycle?

And cycling back to pollution…

Fast Fashion

+

MicroFiber Pollution

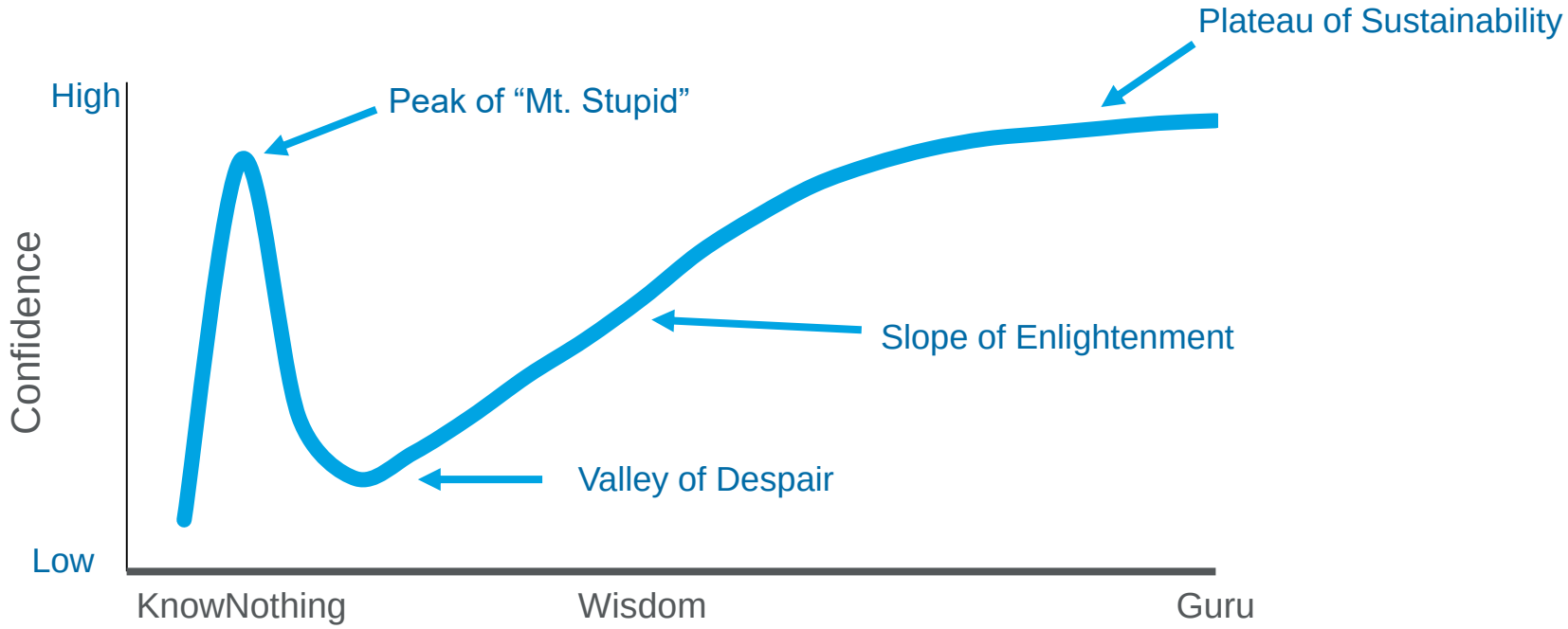
→

Fast Fleece

And finally…

Dunning – Kruger Effect

Where would you place yourself now?



Contact Information

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