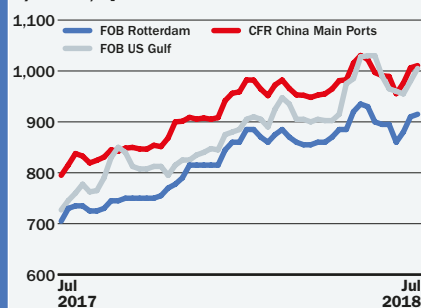


FEEDSTOCK PARAXYLENE (PX)

GLOBAL PARAXYLENE

\$/tonne, spot



PX PROJECTS

Company, Location	Capacity*	Start-up
Fuhaichuang PC, China	1,600	Q3/Q4 2018
Hengli PC, China	4,000	H1 2019
Zhejiang PC, China	4,000	H1 2019
Saudi Aramco, Saudi Arabia	800	Q2 2019

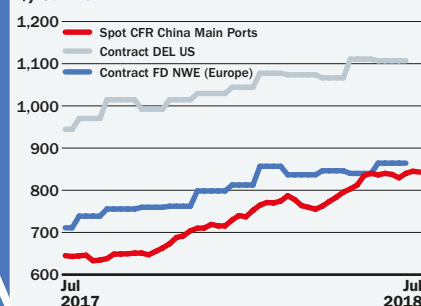
- About 97% of PX demand comes from the polyester chain via intermediate PTA. The polyester demand breakdown is 65% from fibre, 30% from PET resin and the rest from film and other plastic end-uses.
- Europe and US spot generally a netback from Asia, follow Asia price movements.
- Europe spot availability limited by tight supply conditions and a large proportion of business is covered by contracts.
- Europe supply to tighten when Indorama PTA plant in Sines, Portugal, restarts in July (largely idle since 2014).
- Tight US supply easing after BP outage in Q2; downstream capacity to increase with FENC PET resin plant restart.
- Price difference between Asia PX and naphtha narrows to around \$300-350/tonne on oversupplied conditions.
- China to require around 1.3-1.4m tonnes/month of imports, until new local units start up.

97% DERIVATIVE

DERIVATIVE/FEEDSTOCK PURIFIED TEREPHTHALIC ACID (PTA)

GLOBAL PTA

\$/tonne



PTA PROJECTS

Company, Location	Capacity*	Start-up
Sichuan Chengda, China	1,000	end 2018
JBF, India	1,250	end 2018
Xinfengming, China	2,200	Q3 2019
Hengli, China	2,500	Q4 2019
CC Polymers, US	1,300	Q4 2020

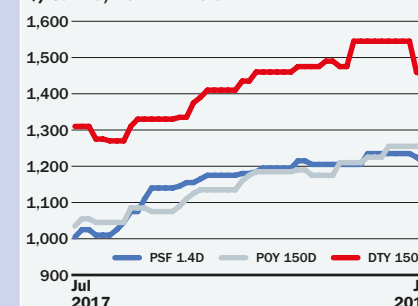
- PTA is primarily used in polyester fibre and PET resin for packaging, bottle and film applications.
- Europe prices based on raw material plus conversion fee lagged behind spot in H1 2018.
- Exceptional tightness in Europe through H1 2018. Suppliers may seek to increase margins in 2019 contracts.
- Globally tight market should lengthen in H2 2018, as new capacities start up in Asia, PTA plant in Portugal reopened in July.
- US contract and spot prices driven up by tight supply, higher upstream costs and firm crude.
- US supply tightened amid BP acetic acid force majeure.
- US downstream demand to increase with FENC PET resin plant restart.
- Asia tight market to ease, with majority of units back in operations.
- China polyester demand growth estimated at 6-7% for 2018.
- Non-China PTA margins positive, keeping run rates at high levels.
- Weakening rupee, credit tightening in India limits demand growth.

65% DERIVATIVE POLYESTER FIBRE

- Polyester stable fibre (PSF) is derived from the polymerisation of PTA and MEG, or from PET fibre chips, as is polyester filament yarn (PFY). Partially oriented yarn (POY) is derived from melting and spinning fibre chips. POY is then extruded and texturised into drawn texturised yarn (DTY). PSF is spun into yarn, then woven into fabric for apparel, upholstery and curtains. It is also used as stuffing for toys and pillows and in bedding and furniture.
- Asia polyester demand growth will remain moderately strong and will largely be driven by growth in the China market with new polyester capacities coming onboard in China.
- Asia polyester operating rates largely stabilised at above 80% in 2017, expected to be maintained in 2018.
- Asia polyester inventory levels have been managed at moderately low levels in 2018 which have lent support to polyester prices and kept margins at generally healthy levels.

ASIA POLYESTER FIBRE

\$/tonne, FOB NE Asia



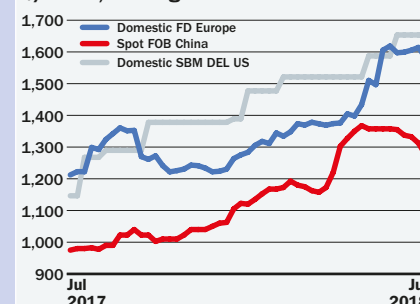
POLYESTER FIBRE PROJECTS

Company, Location	Capacity*	Start-up
Yizheng, China (PSF)	100	H2 2018
Xin Feng Ming, China (PFY)	300	H2 2018
Tongkun, China (PFY)	300	H2 2018
Yizheng, China (PSF)	100	H2 2018
HuaHong Chemical Fibre, China (PSF)	100	H2 2018
Xin Feng Ming, China (PFY, fibre chip)	300	H2 2018
Tongkun, China (PFY)	600	H2 2018
Hua Xi Cun, China (PSF)	200	H2 2018
Lu Yu, China (fibre chip)	100	H2 2018

30% DERIVATIVE POLYETHYLENE TEREPHTHALATE (PET)

GLOBAL PET

\$/tonne, bottle grade



PET PROJECTS

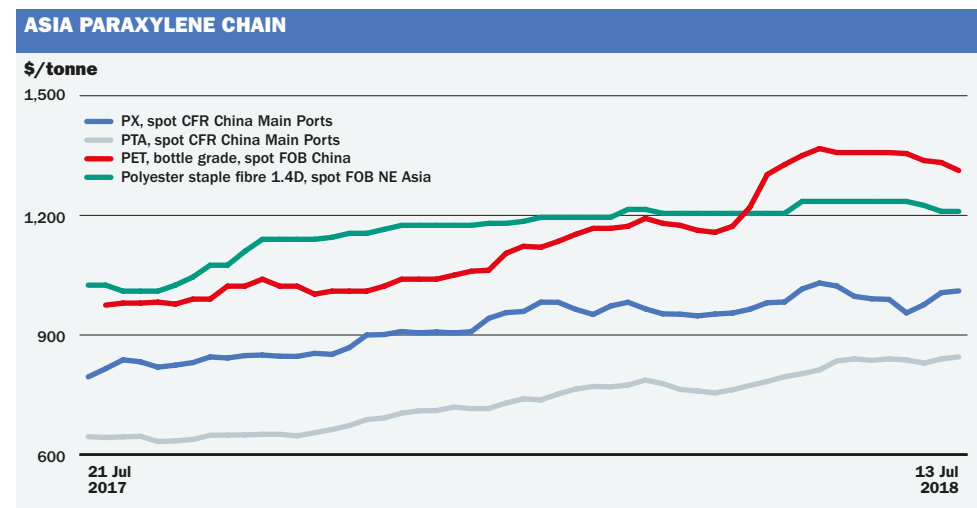
Company, Location	Capacity*	Start-up
Far Eastern Petrochemical, Vietnam	400	Jul 2018
CC Polymers, US	1,100	Q1 2020

- PET can be made into a resin, fibre or film. Largest outlet is synthetic fibres followed by bottle resin. Film is used in electrical applications and packaging.
- Europe PX and MEG drive PET price when market is balanced.
- Exchange rates, global supply/demand determine PET flows into Europe.
- Security of supply in Europe paramount after period of availability difficulties, mostly stemming from PTA outages.
- New trade restrictions in Europe unlikely to be imposed in medium term.
- US prices pressured higher amid reduced domestic production capacity on M&G bankruptcy, import probe.
- US supply relief expected on FENC restart of former M&G project.
- Asia PET driven up by global tight supply and producers achieving good margins.
- New and restarting plants in Asia soften buying sentiment.

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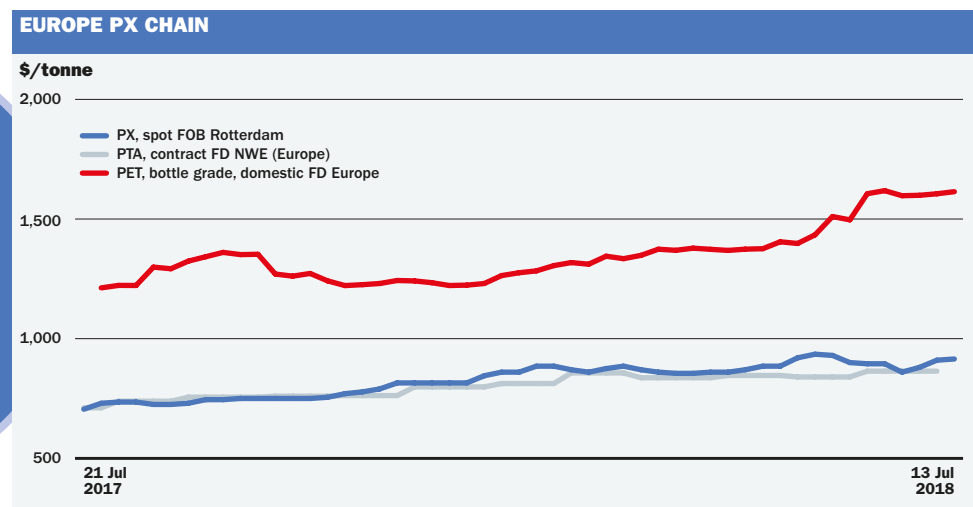
*Capacity '000 tonnes/year

REGIONAL PRICES – PARAXYLENE VALUE CHAIN



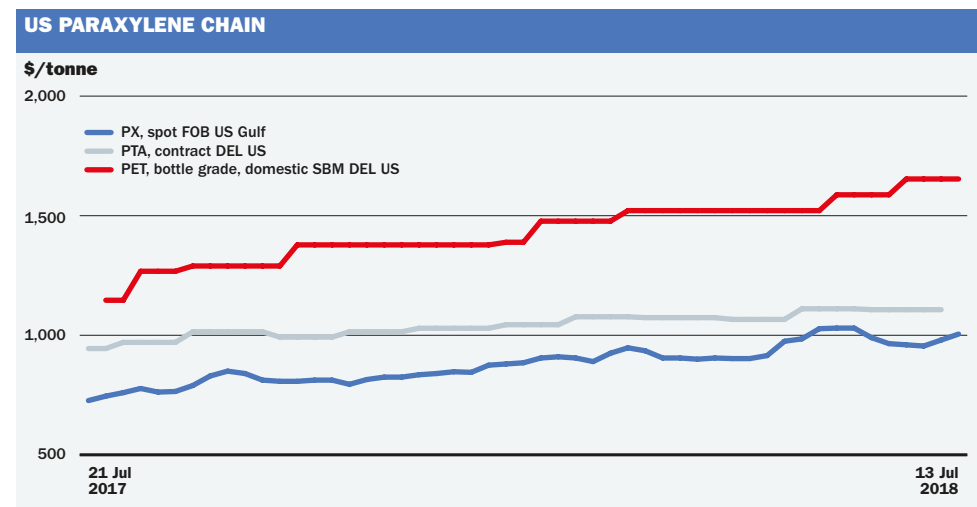
\$1,235

52-week high for Asia polyester staple fibre prices, 22% higher from their low



34%

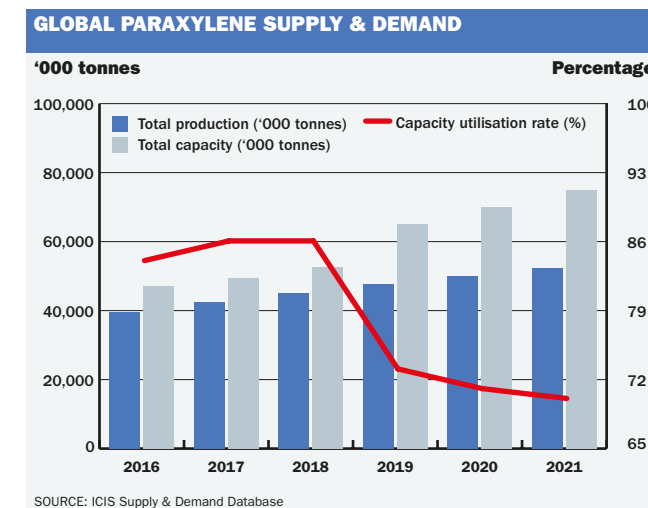
Surge in Europe PET price from 52-week low of \$1,212 to the recent \$1,619



\$1,111

52-week high for US PTA prices, up 18% from their low

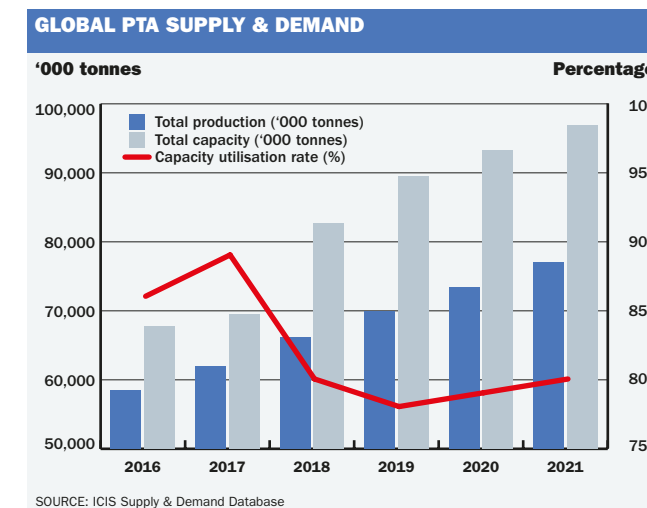
SUPPLY & DEMAND OUTLOOK FOR PARAXYLENE VALUE CHAIN



70%

Projected operating rate by 2021, falling precipitously from 86% in 2018

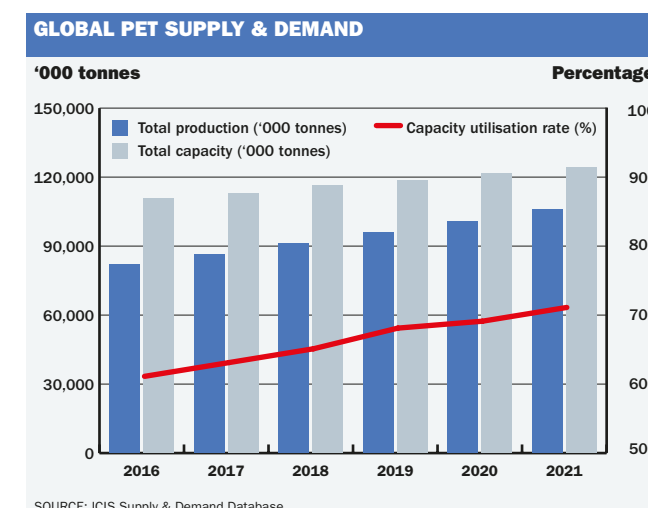
- Paraxylene production to rise steadily to over 52m tonnes by 2021
- Paraxylene capacity to jump in 2019, and continue rising to almost 75m tonnes by 2021



80%

Projected operating rate by 2021 after peaking at 89% in 2017

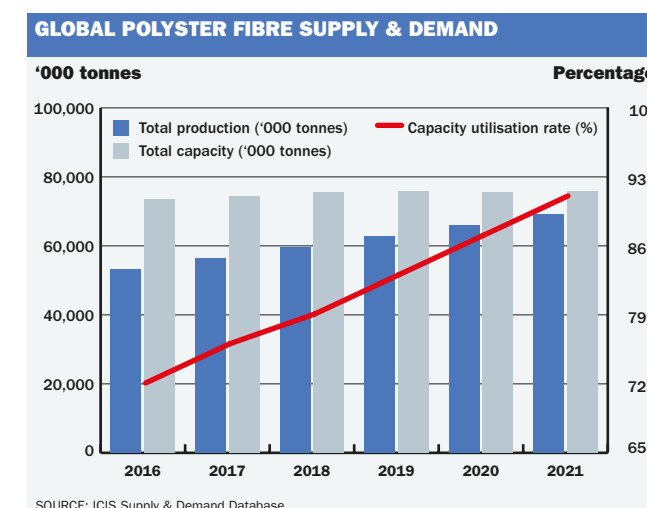
- PTA production to rise to around 77m tonnes by 2021
- PTA capacity to increase at a much higher rate, especially in 2018, reaching almost 97m tonnes by 2021



71%

Projected operating rate by 2021 after multiple years of steady gains

- PET production to grow strongly to reach nearly 106m tonnes by 2021
- PET capacity to increase at a slower pace, especially after 2018, to around 124m tonnes by 2021



91%

Projected operating rate by 2021 after multiple consecutive years of gains

- Polyester fibre production to rise consistently to over 69m tonnes by 2021
- Polyester fibre capacity to increase much more gradually after 2018, reaching almost 76m tonnes by 2021

ICIS SUPPLY AND DEMAND DATABASE

The ICIS Supply and Demand database provides a comprehensive picture of global supply and demand for the full spectrum of products from oil to chemical intermediates. Its range of product selection options help explain historical price movements, changes in company ownership and illustrates changing supply patterns in the future. It allows you to refine, sort, slice and export data, or create graphs and charts to illustrate your findings more easily and support your strategic planning. For more information or to request more information, please visit www.icis.com/supplydemand