

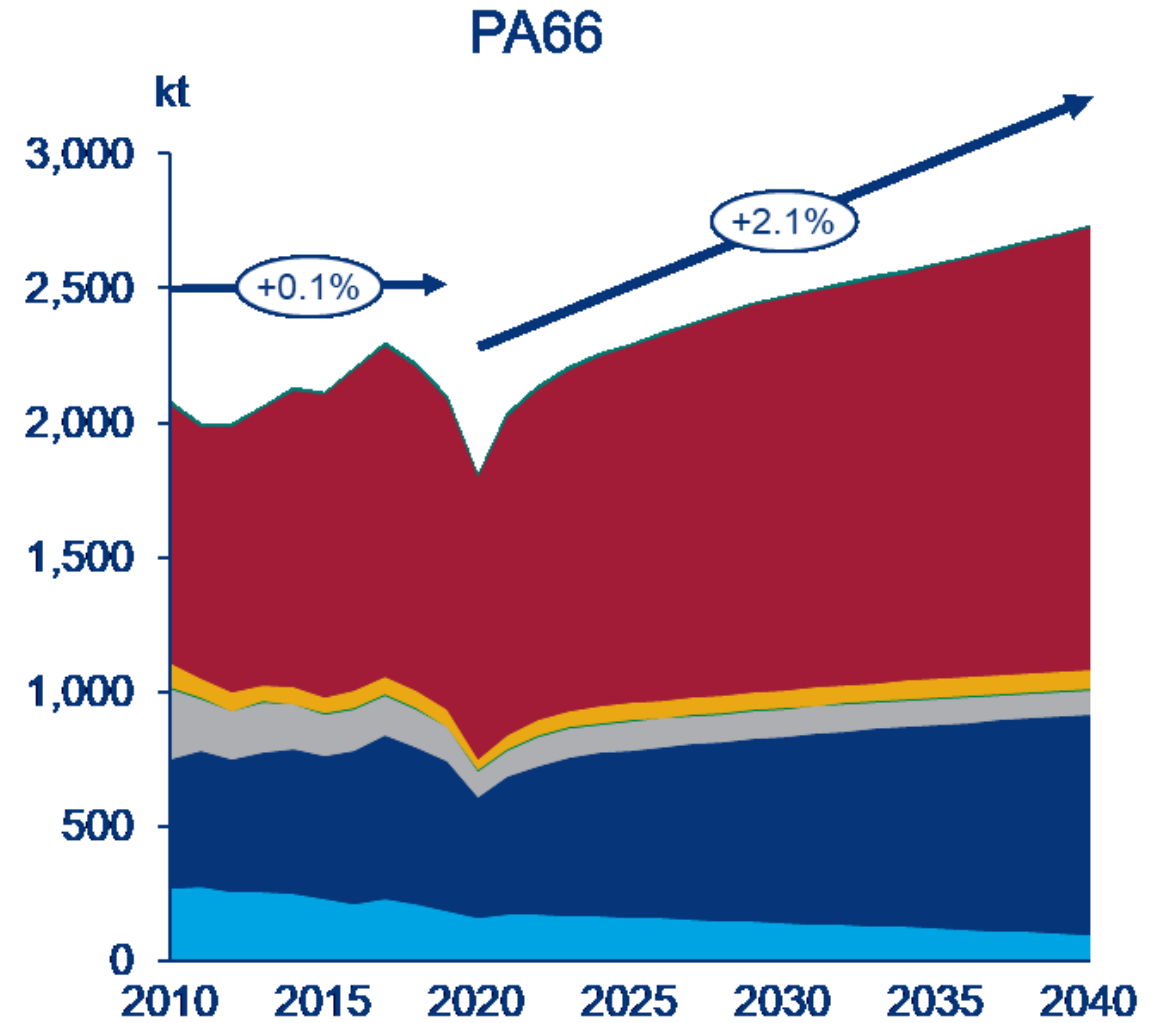
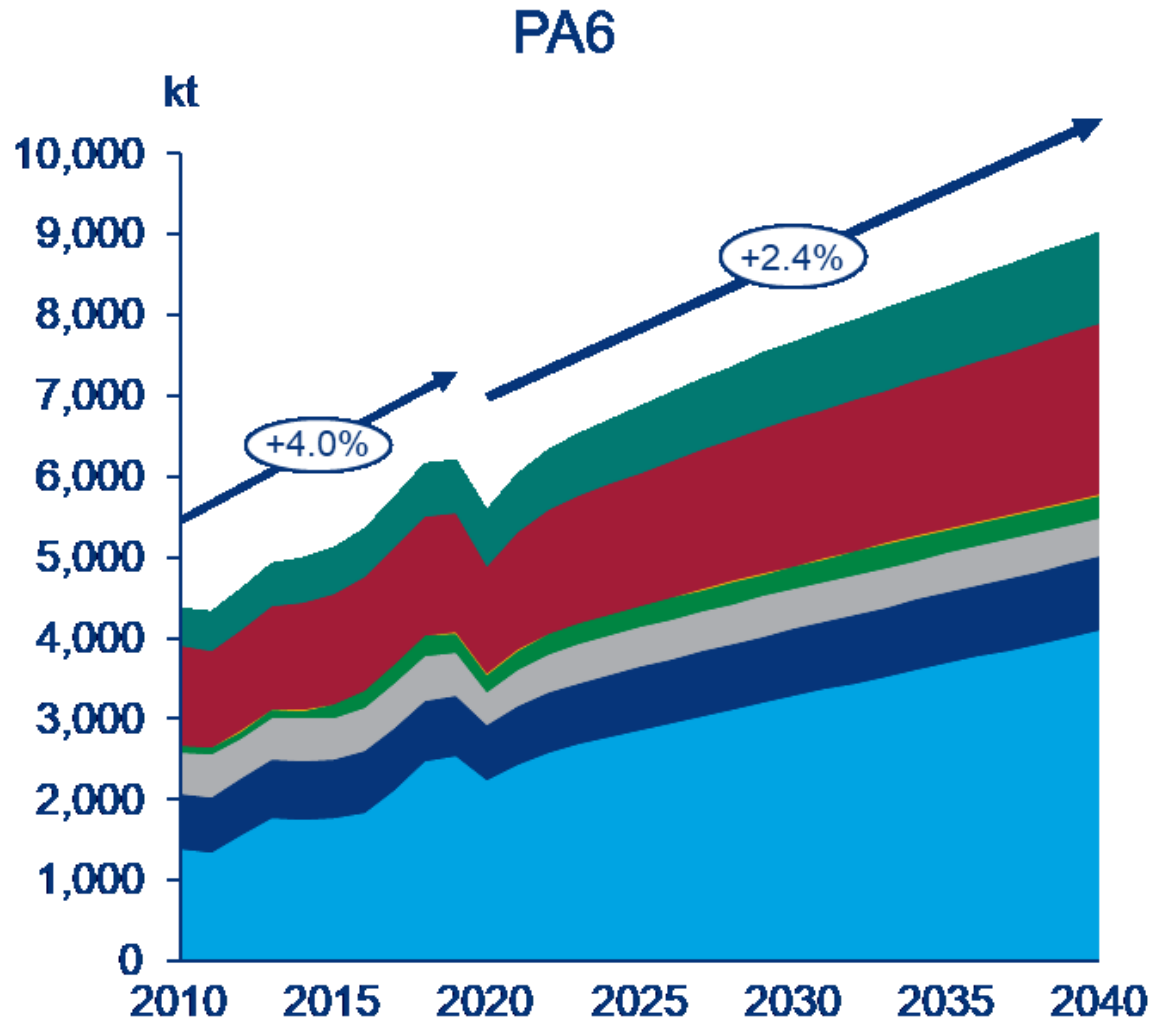


LANXESS
Energizing Chemistry

The next wave in PA66 tightness – are you prepared?



Growth drivers in Polyamide consumption

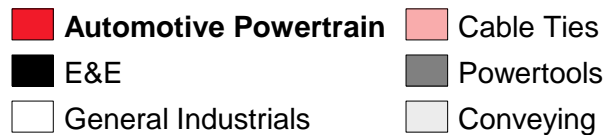
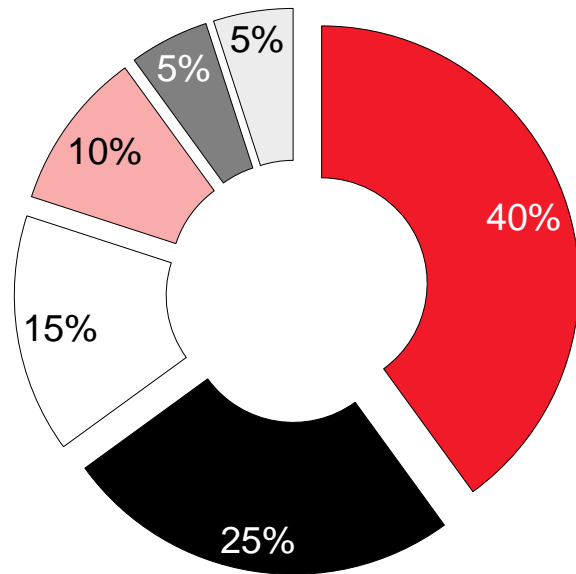


Source: PCI Yellowbook 2020

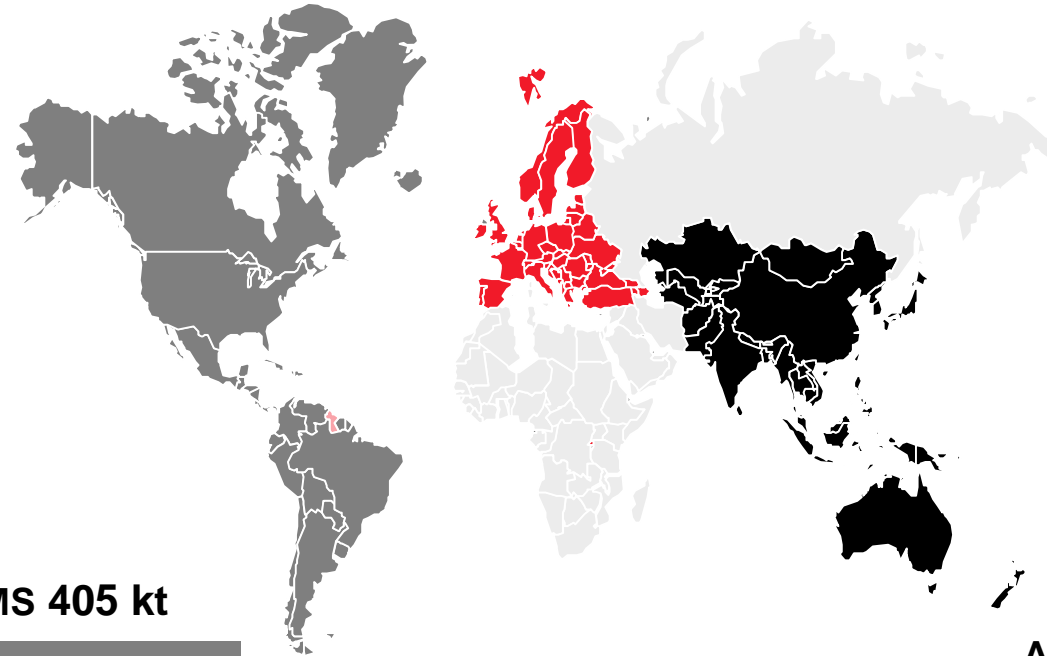
■ Textile
 ■ Industrial
 ■ Carpet
 ■ Staple Fibre
 ■ Engineering Plastics
 ■ Films

PA66 dominated by automotive applications ...

Europe 469 kt



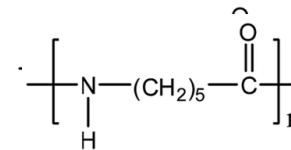
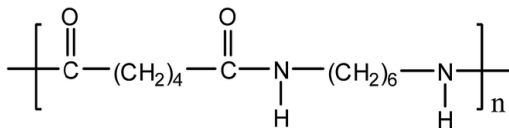
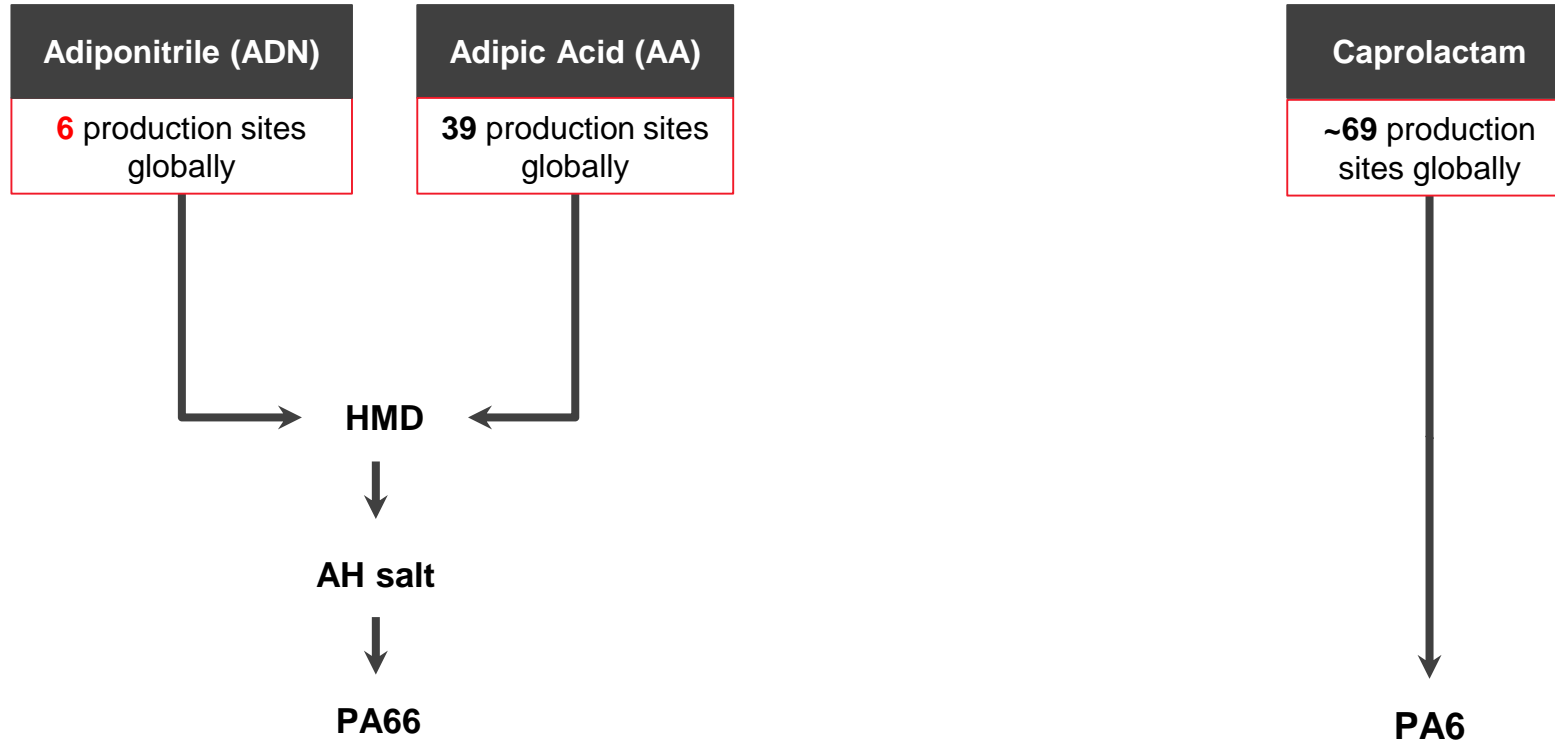
AMS 405 kt



APAC 693 kt

... with Asia being the largest market and a total market volume of 1,568 kt

European PA66 supply depends on one single plant!



Take-Aways

- **ADN** is the key bottleneck in the PA66 chain
- Only 6 ADN plants globally:
 - USA: 3 plants
 - Europe: 1 plant (FRA)
 - APAC: 1 plant Japan, (captive), 1 plant China (small) + 1 for 2022/23

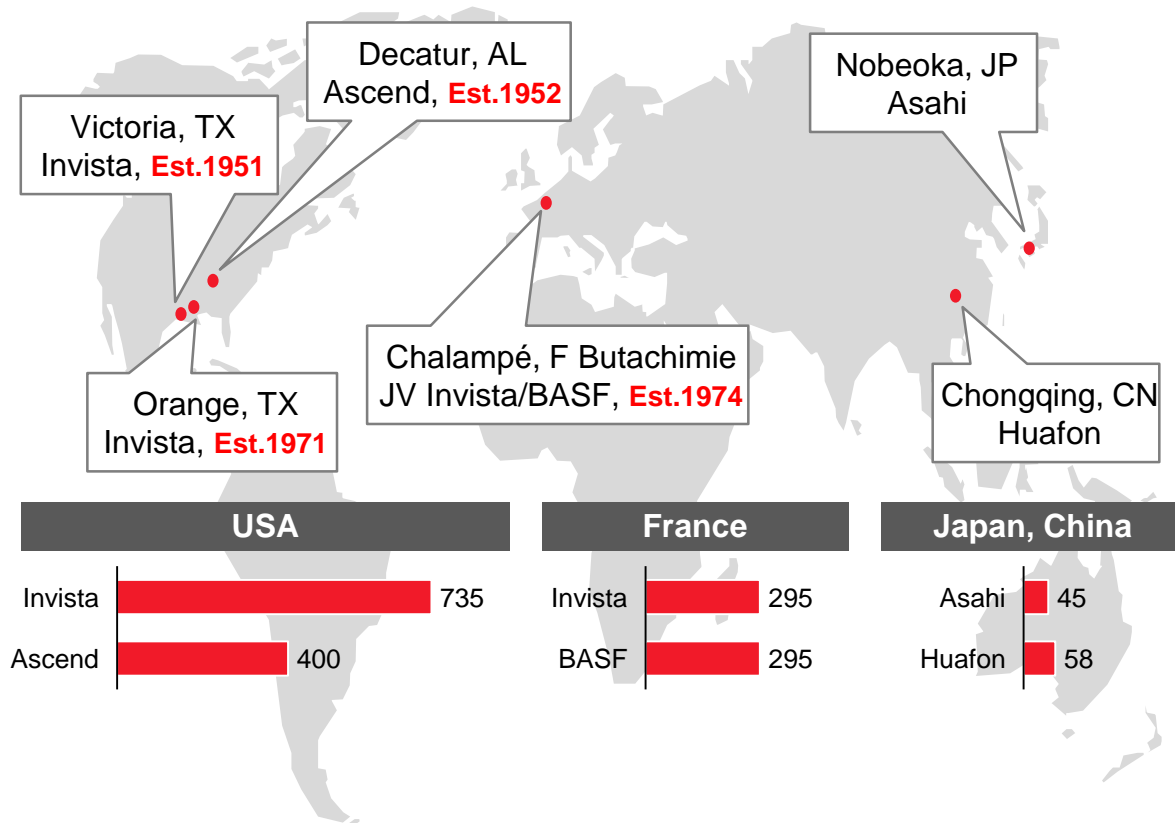


Regional imbalance between supply & demand

European supply depends on one single plant + imports

PA66 supply starts to tighten again with market price increases in all regions

ADN producers and capacities 2020 (1,830kt)*



* acc. to 2020 Wood Mackenzie Global Supply Demand Analytics Service

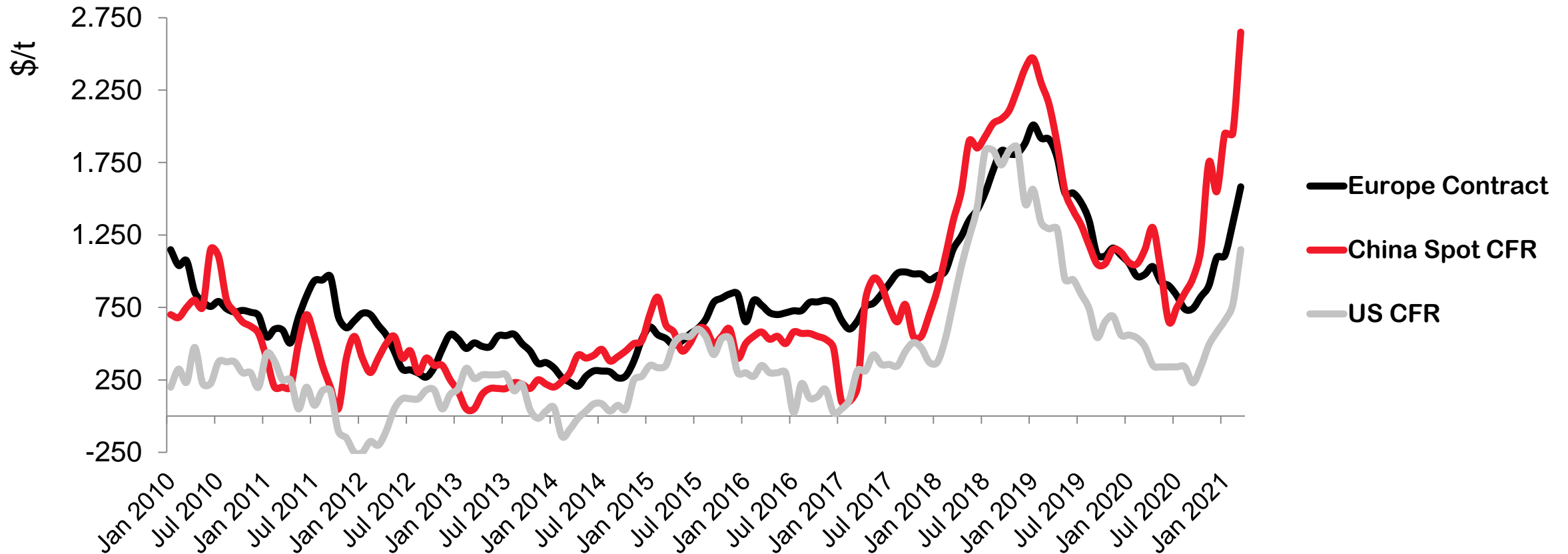
Current PA66 Situation

- PA66 rather long before and during the first Corona wave
- Situation changed: PCI and Tecnon report increasing market prices in all regions
- According to market reports, tight supply is driven by pre-cursors
 - Chalampé with difficulties to ramp-up expanded capacity
 - Orange, TX with relevant production losses due to a Hurricane
 - Victoria, TX with planned maintenance shutdown Q1 2021
- In addition, Ascend with Force Majeure for Pensacola plant



**That's why we see a tightness
in PA66 supply!**

Price delta between PA66 and PA6 increased strongly



... and is not likely to come back soon!

PA66 replacement for good reasons

- Adiponitrile supply depends on few large plants and is structurally tight
- Many consumers have already embarked on replacing PA66 with PA6
- PBT is also an interesting alternative in certain applications
- Changeover is possible in many cases and has successfully been done

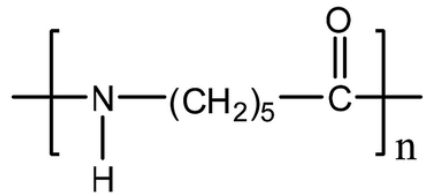
- 100+ successful conversion projects since 2018
- Covering all relevant applications:
- Cam covers, Oil pans, Gear oil covers, Fuel systems, Pedal parts, Mirror brackets, Air suspensions, Connectors, Switches, MCB, Carbon canisters, Gear Shifting Gate, Structural inserts, Stators for E-Motors, Housings, ...
- Local experts in all regions of the world

LANXESS has broad experience to support you in your replacement!

PA6 is a perfect candidate as a PA66 supplement ...

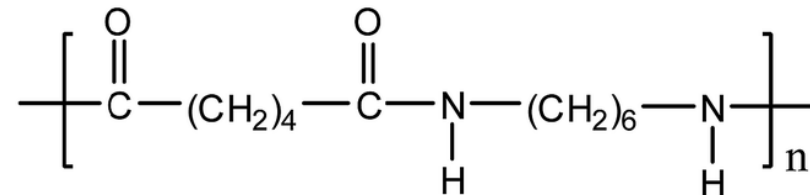
PA6

- Significant lower price
- Better long term heat ageing performance
- Lower shrinkage → Lower warpage
- Better surface appearance
- Better processability
- Better weldability
- Higher impact resistance



PA66

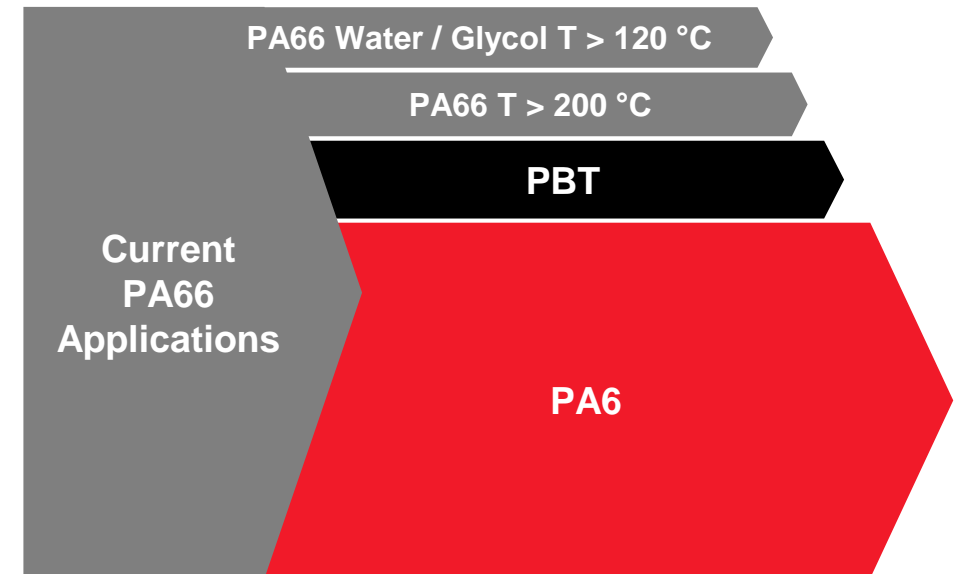
- Higher melting temperature
- Better hydrolytic stability
- Faster crystallization
- Slightly less water absorption
- Slightly higher modulus



... and convinces with its excellent properties!

In most applications PA6 or PBT can substitute PA66!

- Mechanical advantages of PA66 can be compensated by slightly increasing fiber content or by using Durethan P-grades
- In only two areas PA6 cannot fit as good as PA66
 - Water glycol resistance above 120 °C
 - Peak temperatures above 200 °C
- Due to good electrical properties PBT can be a suitable substitute for E/E-Applications



LANXESS has broad experience to support you in your replacement!

**We support you for a successful
replacement of PA66!**



http://

pa66-replacement.lanxess.com



LANXESS Engineering Plastics



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