



# VISION 2025 – CHALLENGES AND OPPORTUNITIES

5TH INDIANOIL PETROCHEMICAL CONCLAVE

4th February 2016 **MUMBAI INDIA**

Polyester Chain Scenario in New Normal Environment

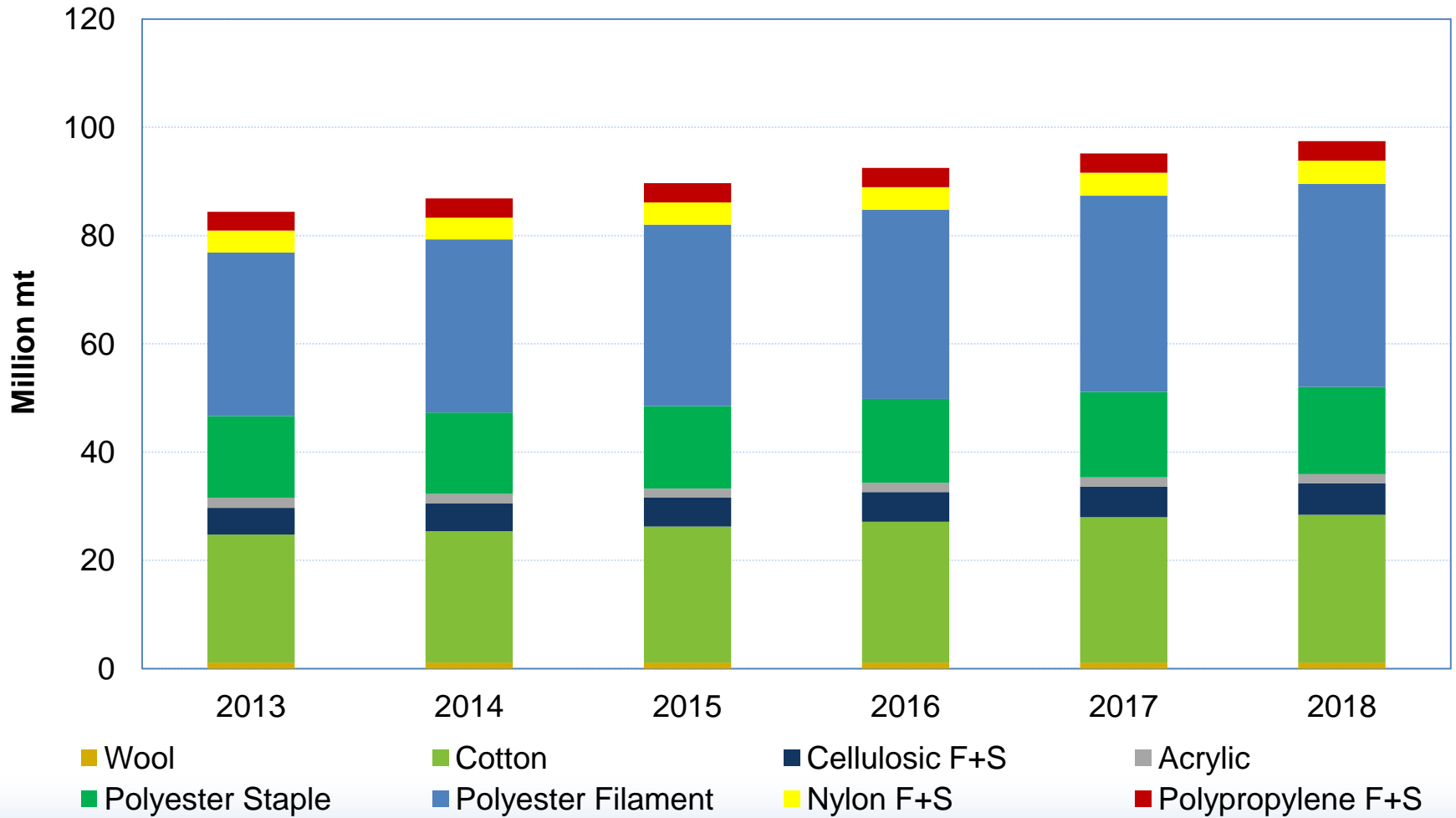
YJ Kim

PCI Xylenes & Polyesters Asia Sdn Bhd

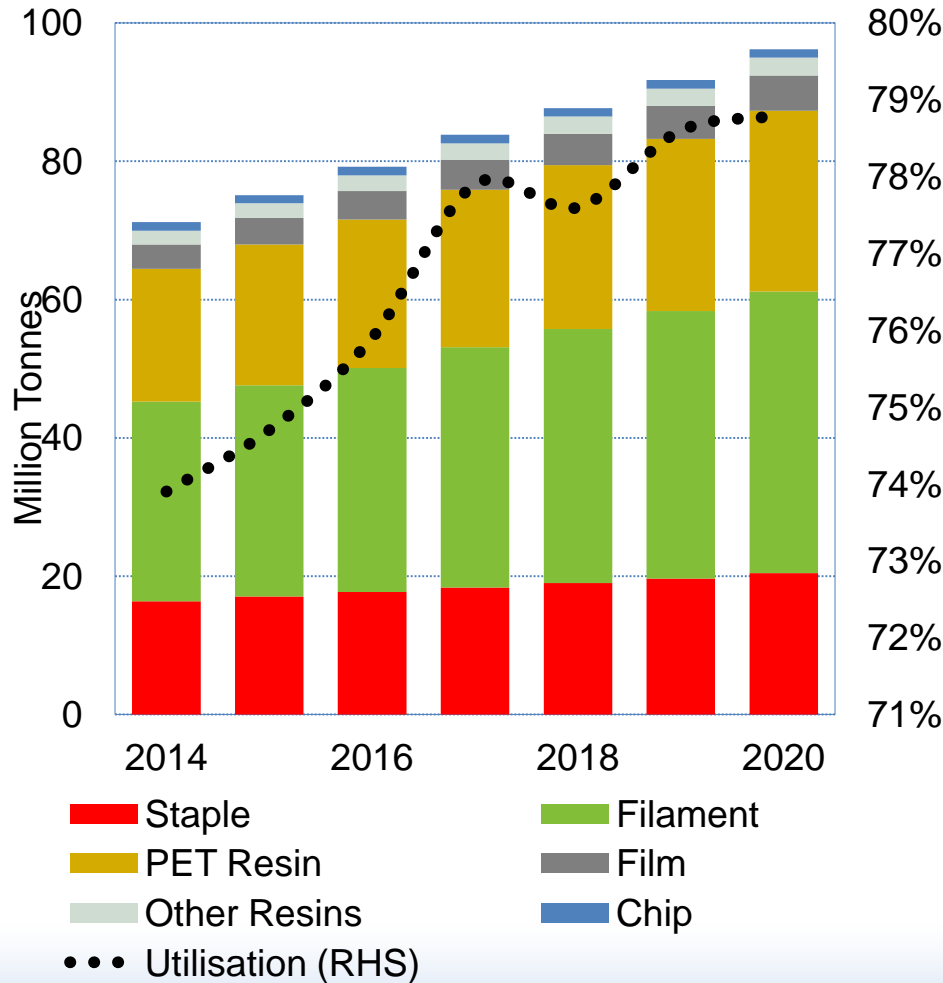
# Polyester Chain Scenario in New Normal Environment

- Demand drivers of polyester fibre and PET
- PTA Landscape Changes-how much longer for those under financial duress?
- What is supporting Asian PX margins?
- MEG Oversupply-who is at risk?

# Global Fibre Mill Consumption

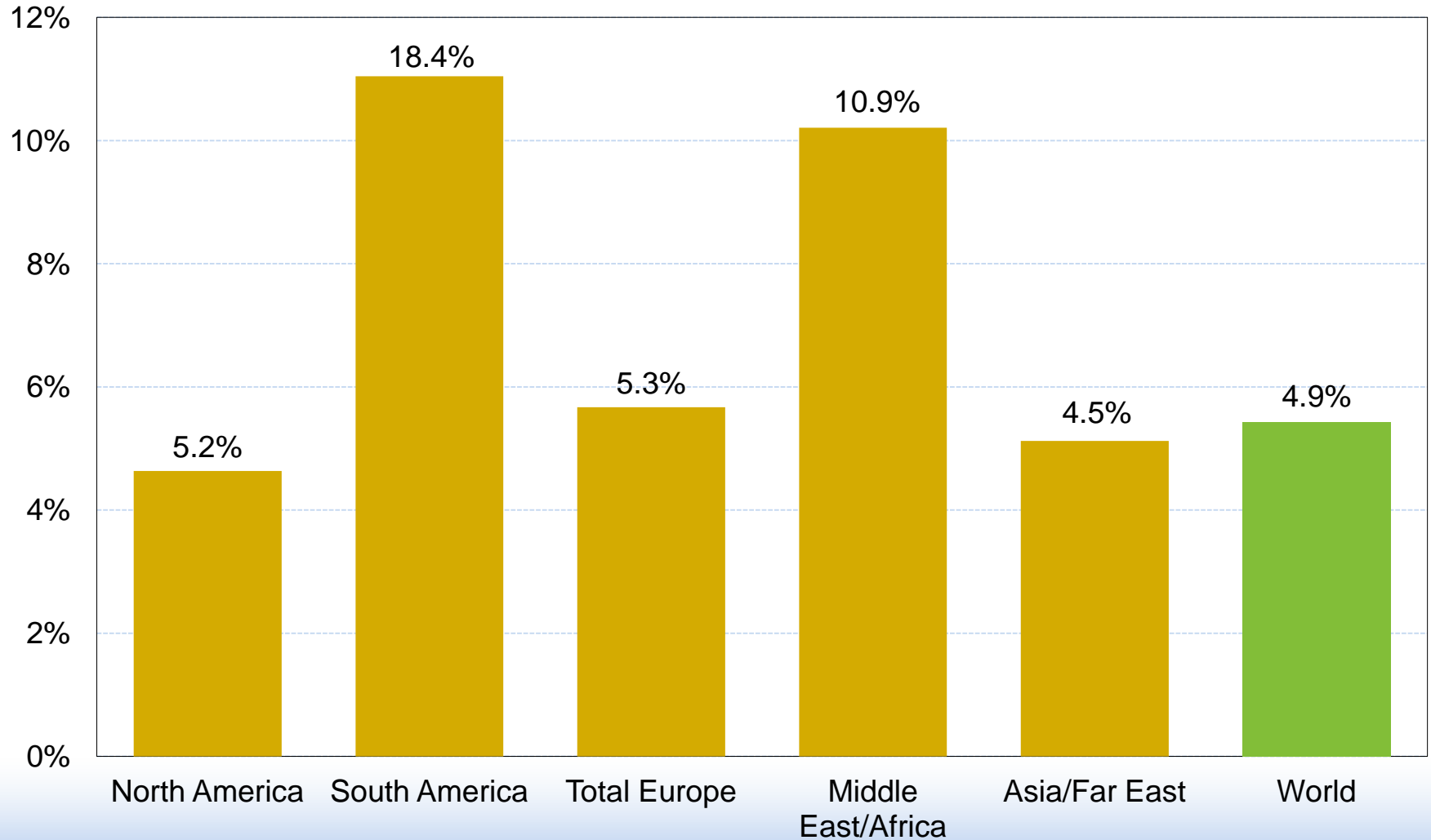


# World Polyester Production 2014-2020



- Global polyester polymer production increased 4.9% in 2015.
- Since the 2008/09 recession the global polyester market has grown at a healthy 6.3% annual rate.
- Mid-term growth forecast is constrained by slowing economy globally and markets mature.
- For 2016-2017 period, the growth rates for staple is only 3.1% per year while filament is expected at 5.5%, and PET at 5.5% per annum.

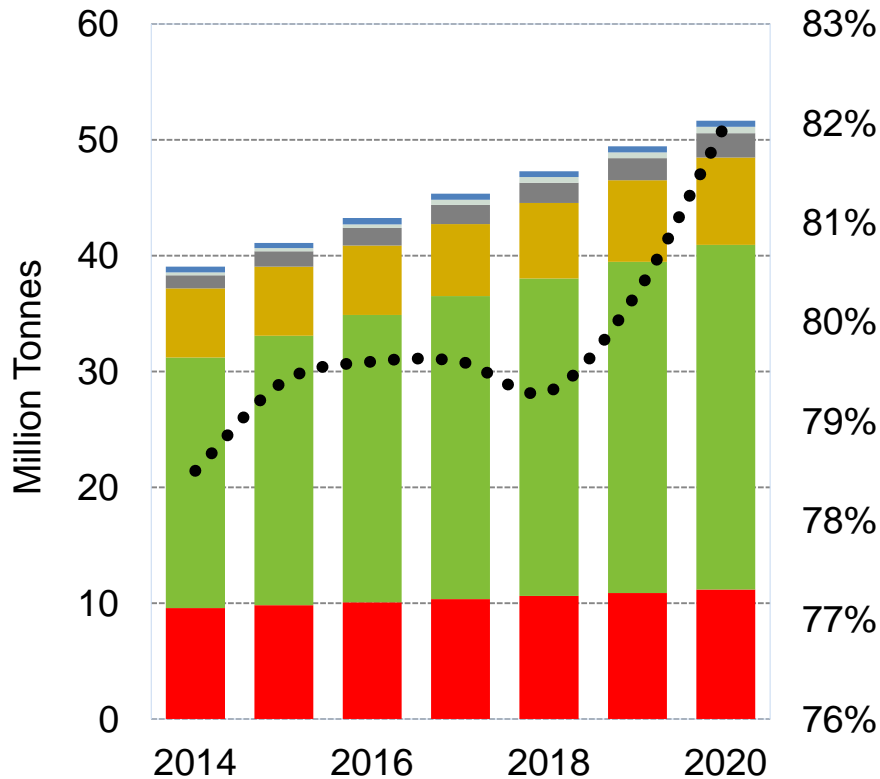
# Polyester Production Growth 2016-18



# World Polyester Forecast (thousand tonnes) 2014-2018

	2014	2015	2016	2017	2018
Staple	15,565	16,044	<b>16,532</b>	16,957	17,507
Filament	30,054	31,823	<b>33,750</b>	35,402	36,583
Total Fibre	45,619	47,867	<b>50,282</b>	52,359	54,089
PET Resin	19,386	20,182	<b>21,031</b>	22,258	23,614
Film	3,526	3,825	<b>4,122</b>	4,392	4,578
Other Resins	2,001	2,060	<b>2,181</b>	2,383	2,465
Polymer Production	65,465	68,606	<b>72,119</b>	75,706	79,155
Polymer Capacity	85,573	89,203	<b>92,629</b>	95,660	100,152
Polymer Utilisation Rate	74.2%	74.6%	<b>75.5%</b>	76.6%	76.6%
Polymer Production Growth	3.5%	4.9%	<b>5.1%</b>	5.0%	4.7%
PSF	1.7%	2.9%	<b>3.2%</b>	3.1%	3.7%
PFY	4.5%	5.9%	<b>6.0%</b>	4.9%	4.4%
PET	5.3%	3.1%	<b>5.2%</b>	5.8%	6.1%

# China Polyester Production 2014-2020



- Staple
- PET Resin
- Other Resins
- Filament
- Film
- Chip
- Utilisation (RHS)

- In 2016, China is forecast to produce 40 million tonnes of polyester polymer, 43 million tonnes including recyclate.
- From 2017 onwards, growth is expected to fall below 5% level, moderating towards 4.4% to 2020.
- Old assets are weeded out starting significantly from 2014, continue into 2016.
- The pains of this capacity reorganisation should end by 2018.

# China Polyester Forecast (thousand tonnes) 2014-2018

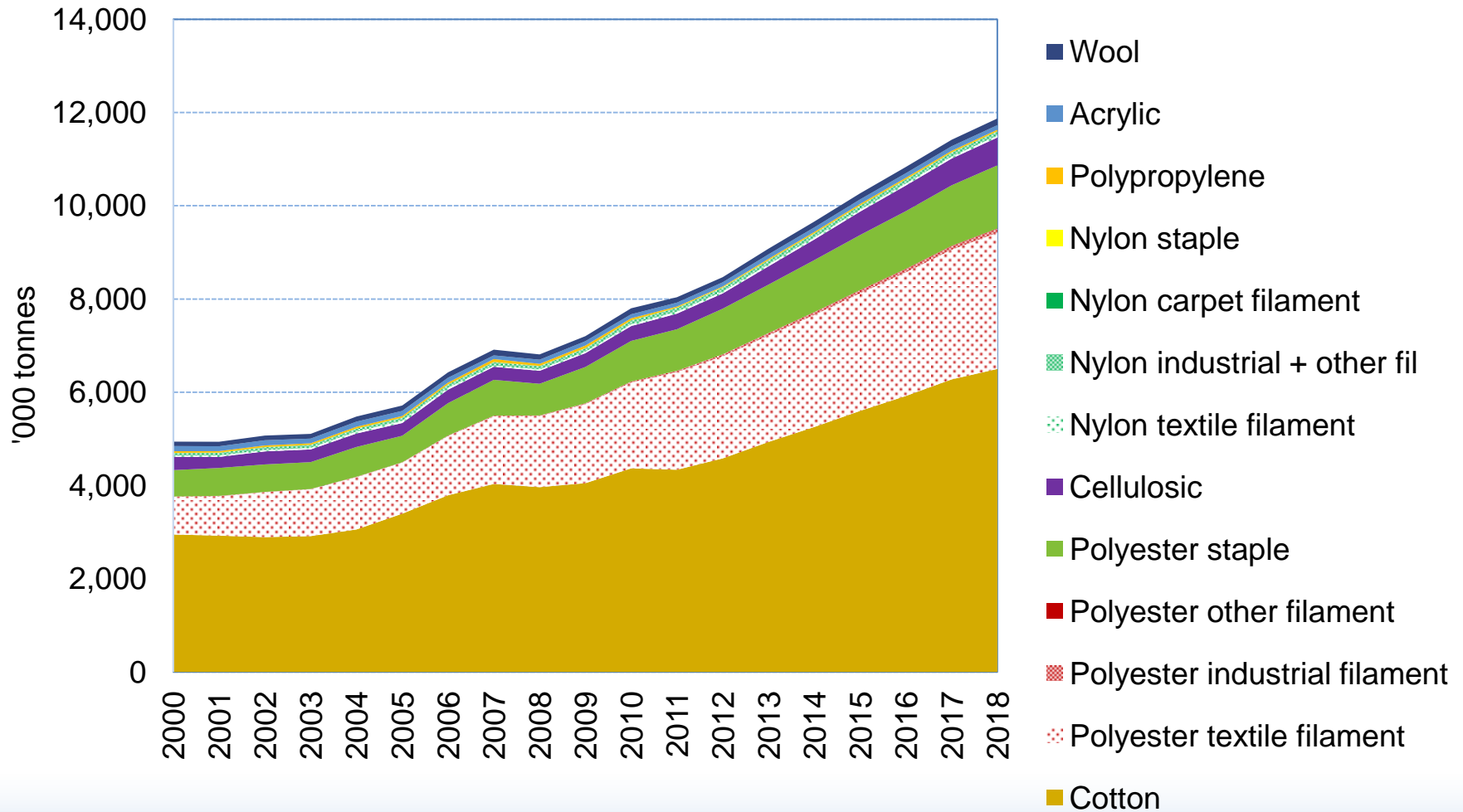
	2014	2015	2016	2017	2018
Staple	9,568	9,836	<b>10,072</b>	10,354	10,623
Filament	21,631	23,245	<b>24,811</b>	26,175	27,407
Total Fibre	31,199	33,081	<b>34,883</b>	36,529	38,030
PET Resin	5,981	5,990	<b>5,998</b>	6,209	6,520
Film	1,133	1,313	<b>1,513</b>	1,653	1,760
Other Resins	258	284	<b>320</b>	437	479
Polymer Production	34,991	37,000	<b>38,968</b>	40,852	42,567
Polymer Capacity	44,244	46,222	<b>48,548</b>	50,749	53,082
Polymer Utilisation Rate	78.5%	79.4%	<b>79.6%</b>	79.6%	79.3%
Polymer Production Growth	5.1%	5.7%	<b>5.3%</b>	4.6%	4.1%
PSF	0.7%	2.8%	<b>2.4%</b>	2.8%	2.6%
PFY	5.6%	7.5%	<b>6.7%</b>	5.5%	4.7%
PET	12.2%	0.2%	<b>0.1%</b>	3.5%	5.0%



## China 13th five year plan 2016-2020 (synthetic fibres tasks)

- Rebalancing Stage : Reduce production growth rate to 3.4% from 9.2% in 12th Plan through cancellation of new projects, lowering capacity utilisation.
- Optimisation Stage : Scrap old capacities. Encourage large scale companies to fully integrate with refineries → Hengyi, Hengli, Rongsheng, Shenhong, Sanfangxiang.
- Development Stage : Appropriately recover the growth pattern in a self-sufficient market environment.

# India textile mill consumption



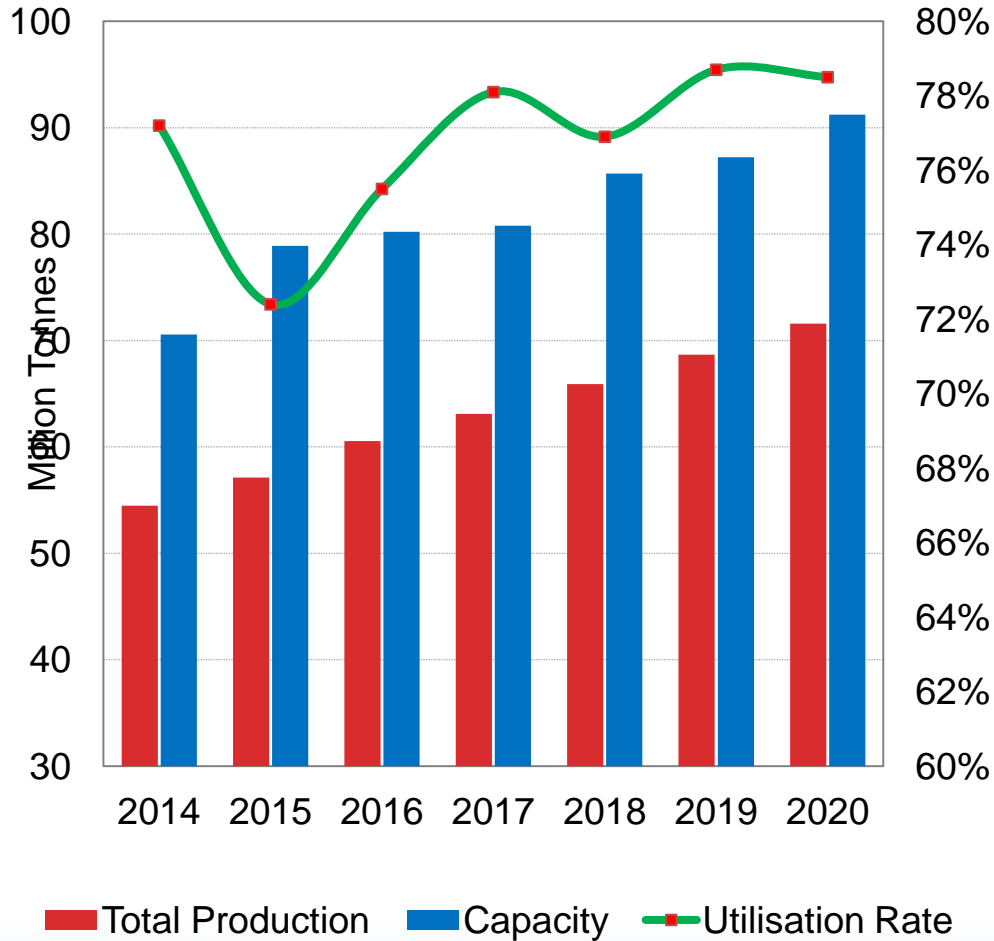
# India Polyester Forecast (Thousand Tonnes)

	2014	2015	2016	2017	2018
Staple	1,310	1,400	<b>1,590</b>	1,720	1,720
Filament	3,055	3,365	<b>3,667</b>	3,970	3,970
Total Fibre	4,365	4,765	<b>5,257</b>	5,690	5,690
PET Resin	968	982	<b>1,250</b>	1,362	1,362
Film	410	480	<b>540</b>	600	600
Other Resins	10	10	<b>10</b>	11	11
Polymer Production	5,493	5,963	<b>6,757</b>	7,327	7,327
Polymer Capacity	7,735	8,488	<b>8,887</b>	8,912	8,912
Polymer Utilisation Rate	71%	70%	<b>76%</b>	82%	82%
Polymer Production Growth	7.8%	7.1%	<b>6.0%</b>	6.8%	6.5%
PSF	6.5%	5.0%	<b>4.7%</b>	4.5%	4.3%
PFY	5.7%	3.5%	<b>5.8%</b>	6.0%	6.2%
PET	22.5%	18.1%	<b>4.7%</b>	8.9%	8.0%

# Polyester Outlook

- Global polyester demand growth forecast in 2016-2017 is lowered to 5%. Industrial and technical applications contribute to growth although in small volume.
- When China becomes fully integrated from refinery to apparel by 2020, “China Inside” scenario is fulfilled.
- Various trade agreements to benefit from preferential duty is vital to sustainable growth. Textile shift to Vietnam in progress.
- ‘Make in India’ policy is set to attract investments both from local and foreign fabric and apparel producers, pending the speed of infrastructure construction.

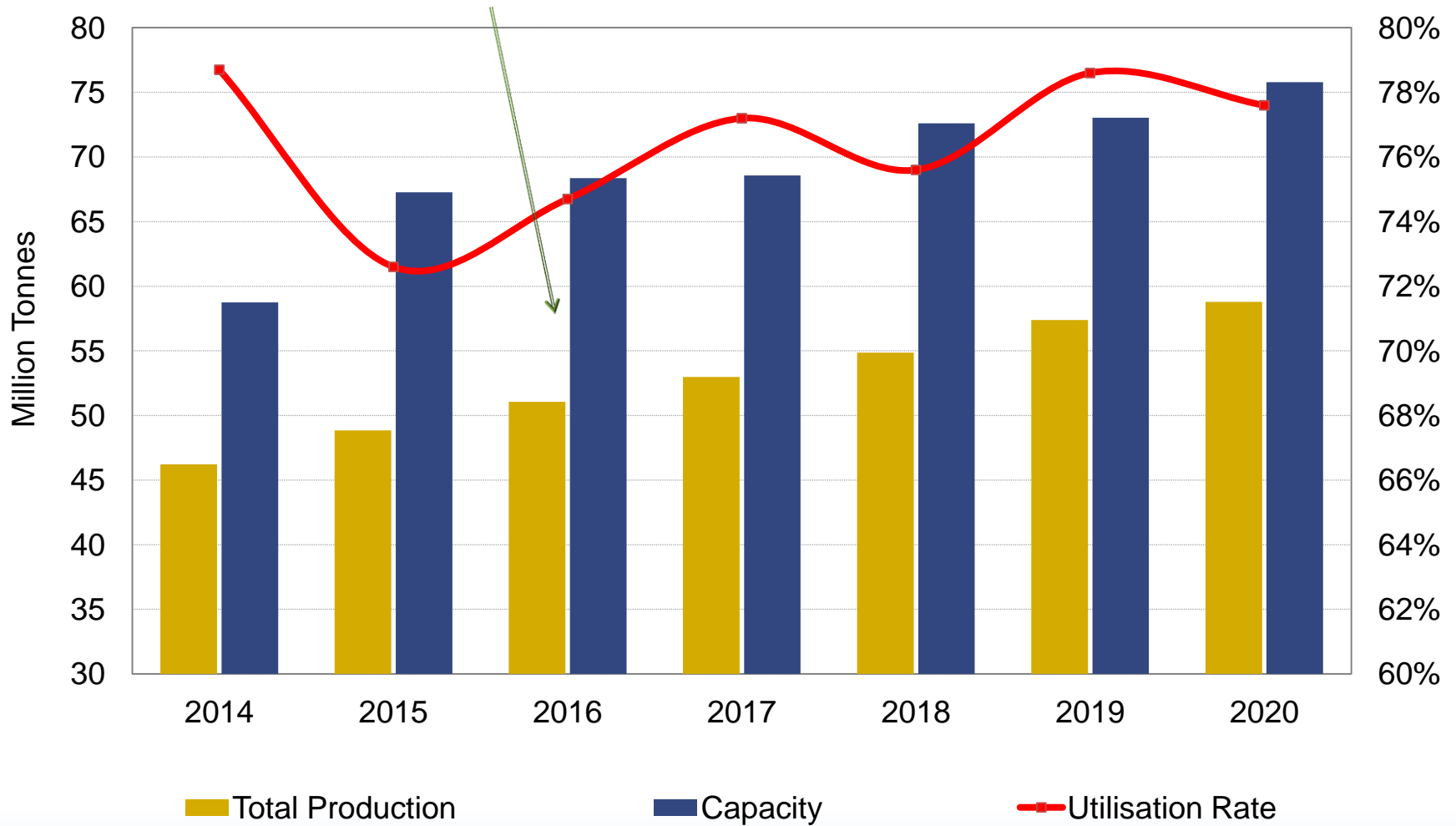
# World PTA Supply Demand



- Capacity flat to 2017; older plants phased out.
- Global PTA utilisation rates in 2016 begin to recover to 76%.
- Capacity will get built where there is a reason e.g., JBF where captive consumption makes a plant worthwhile.
- Middle East market becomes increasingly competitive as India starts to see over capacity.

# Asia PTA Supply Demand

Capacity rationalisation accelerates pace to balance 17 mmt surplus.



# PTA New Capacities 2016-2020

Country	Location	Company	Capacity	Effective	Start up	Remarks
Netherlands	Rotterdam	Indorama	300	250	Q1 2016	
China	Jiangsu	Hanbang	2,200	1,650	Q2 2016	
India	Mangalore	JBF	1,200	600	Q3 2016	
		<b>2016 Total</b>	<b>2,020</b>	<b>1,792</b>		
Taiwan	Kuanyin	OPTC	1,500	1,250	Q1 2017	
USA	Corpus Christi	M&G	1,200	300	Q4 2017	
		<b>2017 Total</b>	<b>2,975</b>	<b>675</b>		
China	Zhejiang	Tongkun 2	2,500	2500	Q1 2018	?
	Hainan	Yisheng 2	2,000	2,000	Q1 2018	?
		<b>2018 Total</b>	<b>2,310</b>	<b>2,627</b>		
China	Yunnan	Yunnan Petro	2,000	2,000	Q1 2019	?
		<b>2019 Total</b>	<b>1,850</b>	<b>750</b>		
China	Liaoning	Heng Li 4	2,300	2,300	2020	?
	Xinjiang	Urumqi 2	1,000	1,000	2020	?
	Sichuan	Shengda	1,200	1,200	2020	?
		<b>2020 Total</b>	<b>4,540</b>	<b>3,990</b>		

# Asia PTA Effective Utilisation

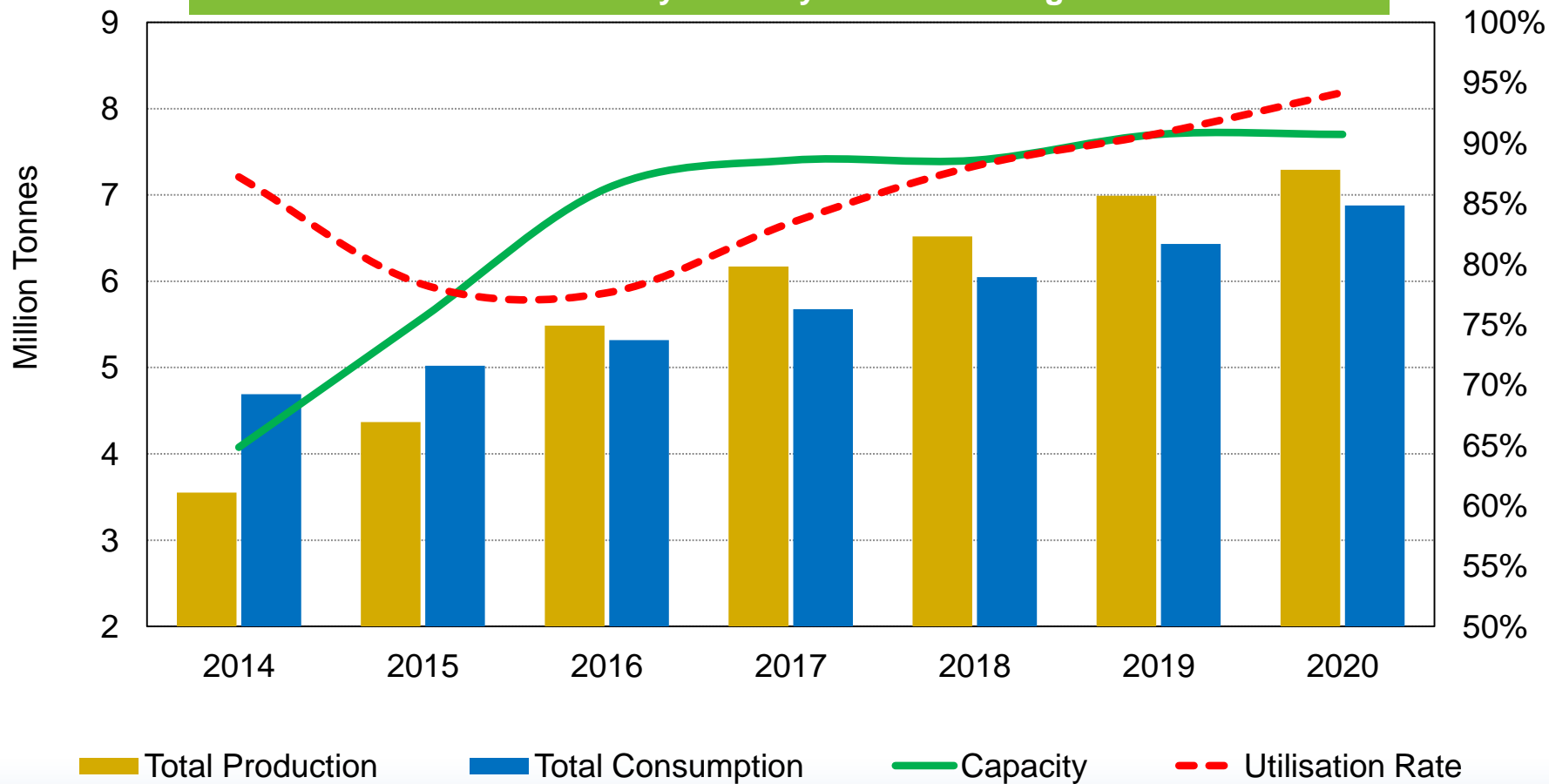
(000 tons)	2014	2015	2016
Capacity (a)	58,755	67,262	68,363
Production	46,212	48,838	51,052
Nameplate Utilisation	<b>78.7%</b>	<b>72.6%</b>	<b>74.7%</b>
Idled Capacity Est.(b)	<b>8,700</b>	<b>14,200</b>	<b>15,990</b>
Net Capacity (a)-(b)	50,055	53,062	52,373
Consumption	44,374	46,665	49,011
Forecast Utilisation	<b>88.7%</b>	<b>87.9%</b>	<b>93.6%</b>

- ◀ 16 million tonnes idled in Asia in 2016 are subjected to rationalisation.
- ◀ Majority of idled assets are highly likely to stay down.
- ◀ Dragon Aromatic explosion will keep Xianglu PTA down for extended period.
- ◀ Many capacity additions already shelved for 2017 onward.



# India PTA Supply Demand

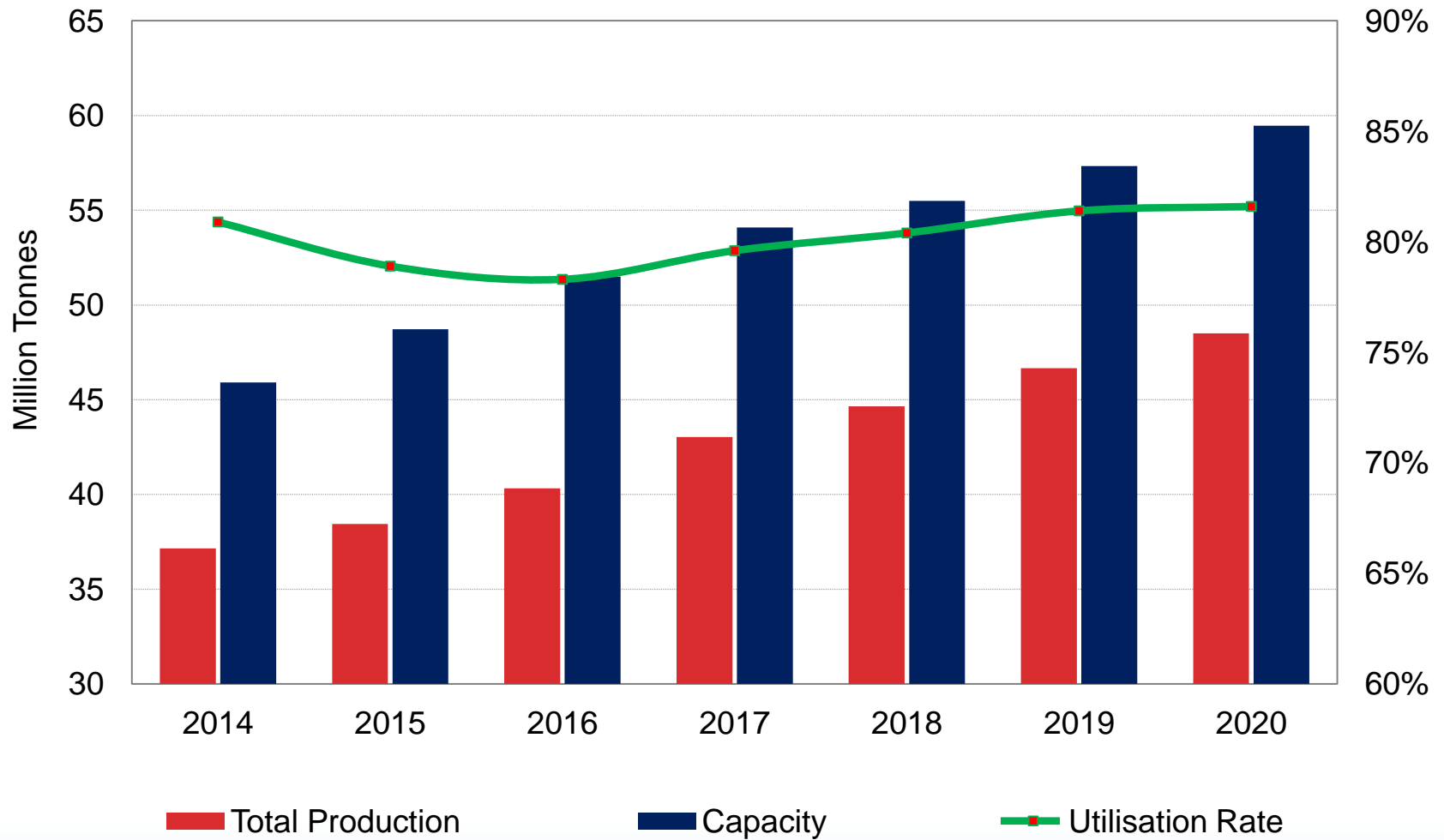
New investments in 2015 will push out 1 million tonnes of imports, hitting Korea hard and likely to catalyse restructuring in NE Asia



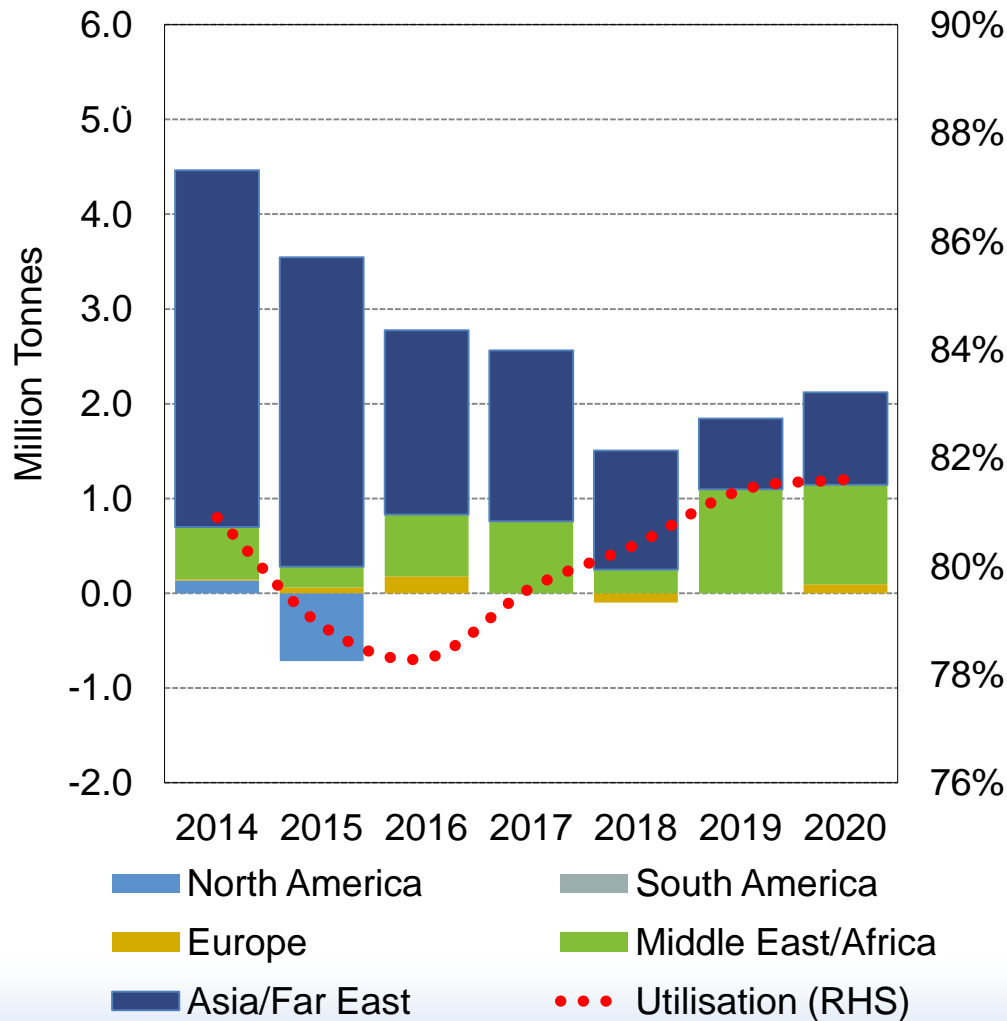
# PTA Changing Landscape 2016-17: Production Discipline

1. Consumption Growth : New business context will be based on moderate recovery. Will India lead the next growth after China?
2. Margin : Competitive environment sets narrow margin for next 2 years before reinvestment return is justified.
3. Trade : Asian producers look to Vietnam, USA, Europe as China and India switch to net exporters.
4. Consolidation : Many distressed assets will emerge as losses accumulate.

# World Paraxylene Supply Demand



# World Paraxylene Capacity Growth 2014-2020



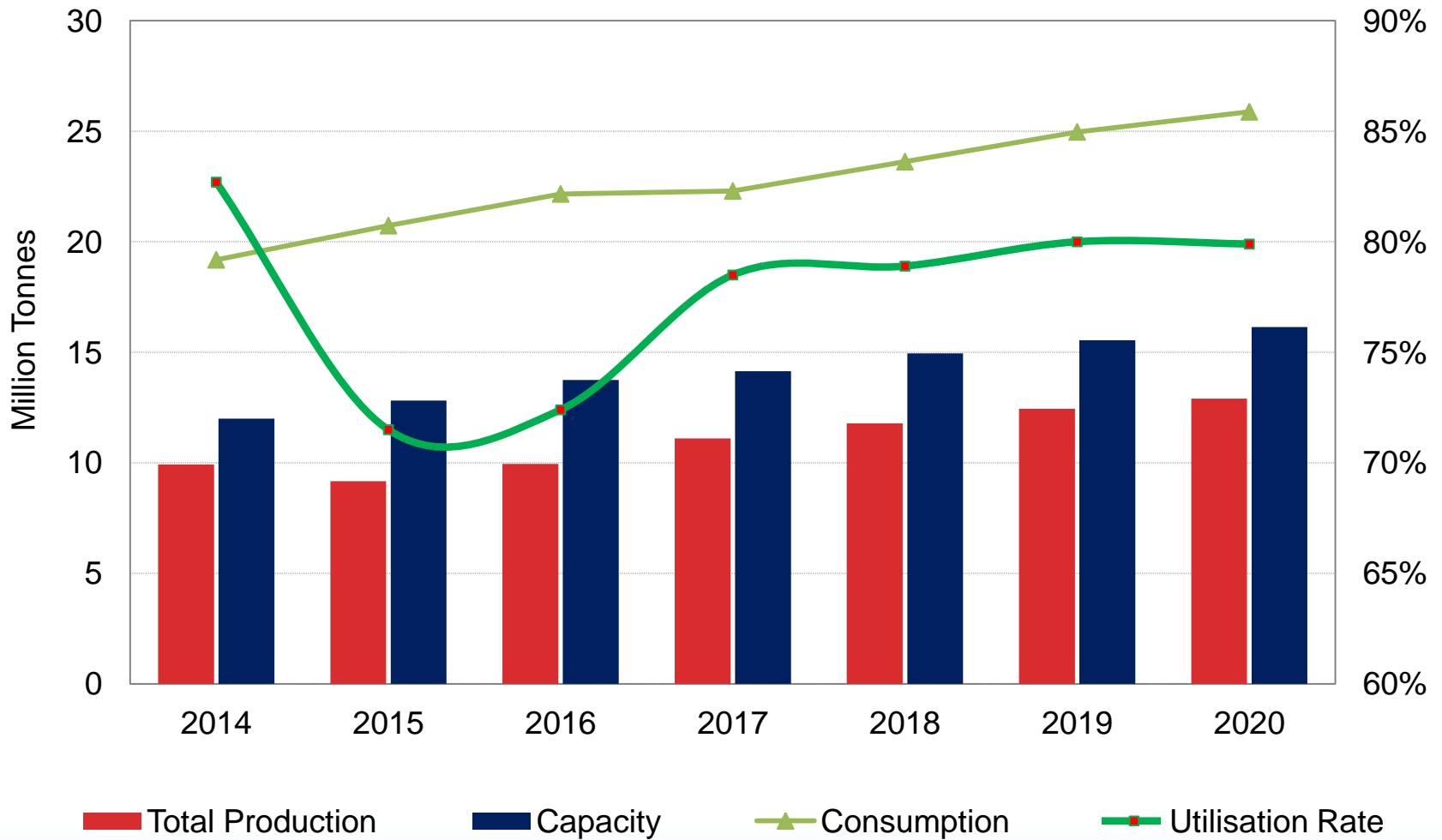
- 11 new paraxylene units started 2013-2014, increasing competitive supply.
- North America and European asset closure and idling in progress.
- Periods of tightness with plentiful nameplate capacity?
  - ▶ Accumulated outages in Asia totalling some 4 to 4.5 million tonnes, either due to economics or incidents.
- Rate of new unit additions now likely to keep headline utilisation 'lower for longer'.
- China is the 'wild card'.

## Paraxylene Capacity Expansion 2016 - 2018

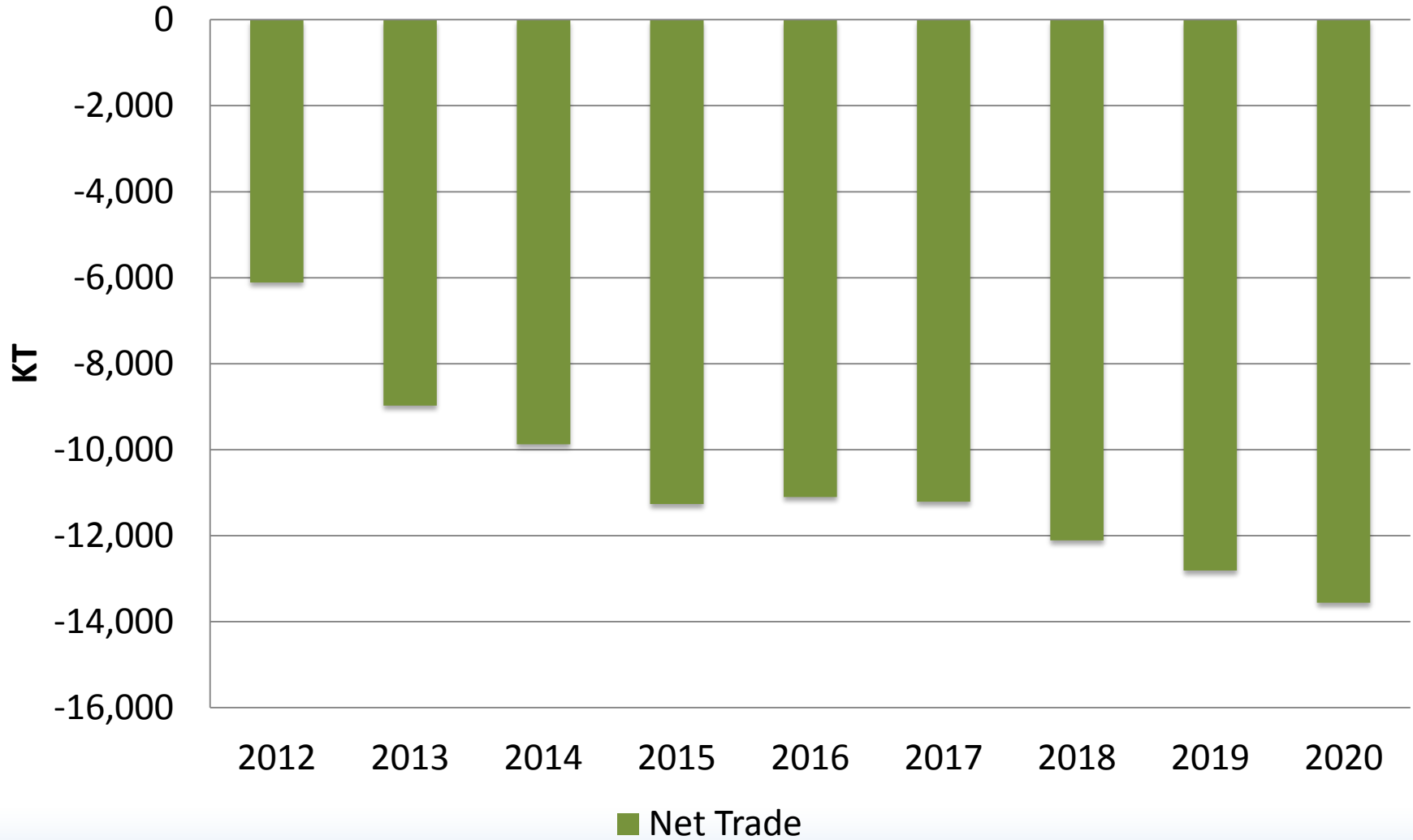
Country	Location	Company	Capacity	Start-up
Portugal	Oporto	GALP Energia	-135	-135
India	Jamnagar	Reliance Industries 4	2,250	1,312
China	Hainan, Yangpu	Sinopec Hainan Refining 2	800	67
		<b>2016 Total</b>	<b>2,915</b>	<b>1,244</b>
Saudi Arabia	Rabigh	PetroRabigh	1,340	1,000
Pakistan	Mouza Kund, Balochistan	Byco Oil Pakistan Ltd	92	92
		<b>2017 Total</b>	<b>1,432</b>	<b>1,092</b>
Vietnam	Nghi Son	Nghi Son Petrochemical	600	450
China	Fujian, Quanzhou	Sinochem	750	400
Saudi Arabia	Jizan	Saudi Aramco	1,000	250
		<b>2018 Total</b>	<b>2,250</b>	<b>1,000</b>

*LATEST: Pertamina just announced \$5.5bn refinery expansion at Cilacap +22kbpd to 370kbpd – incl hydrocracker, additional PX and propylene*

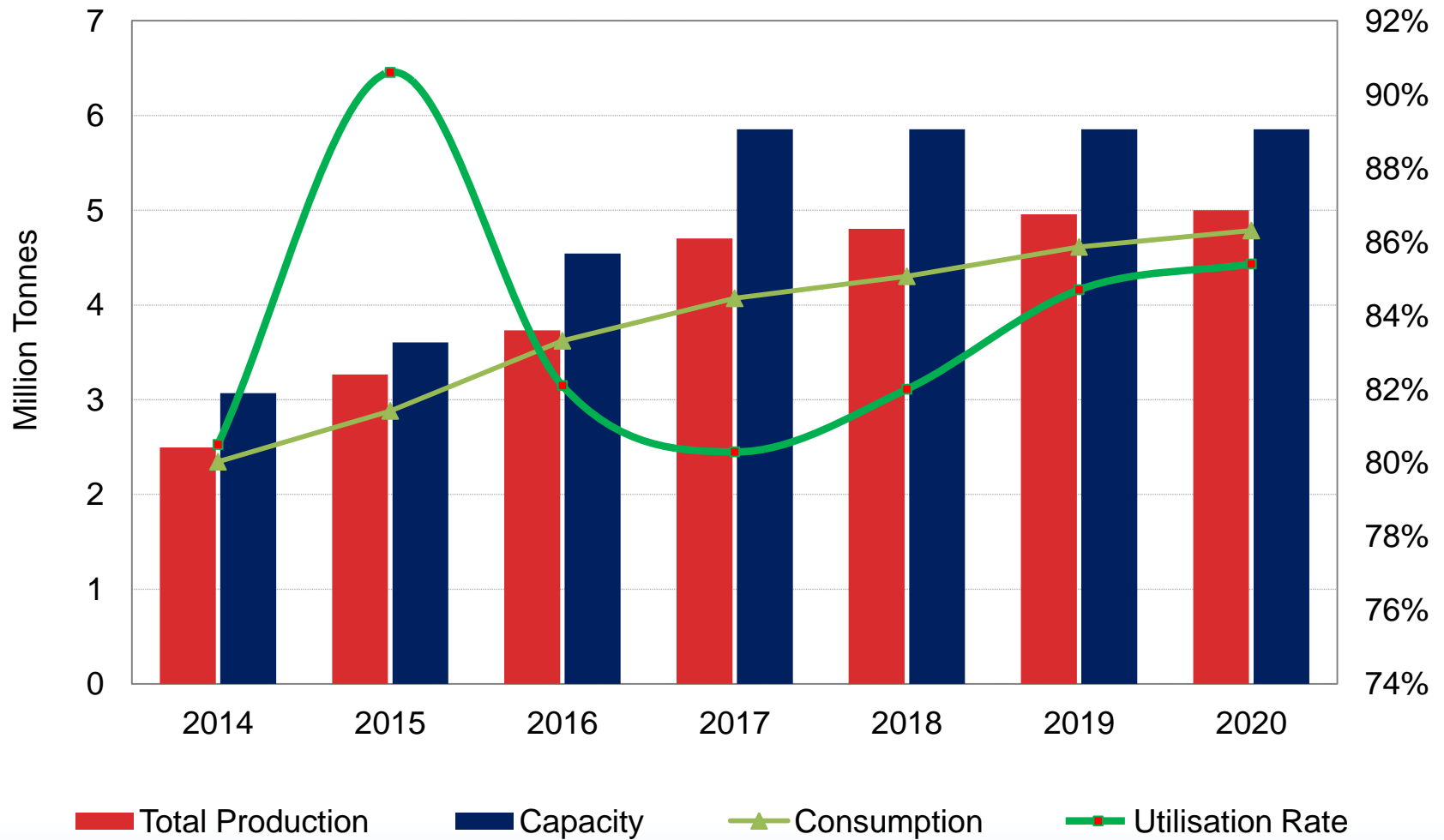
# China Paraxylene Supply Demand



# China Paraxylene Net Trade

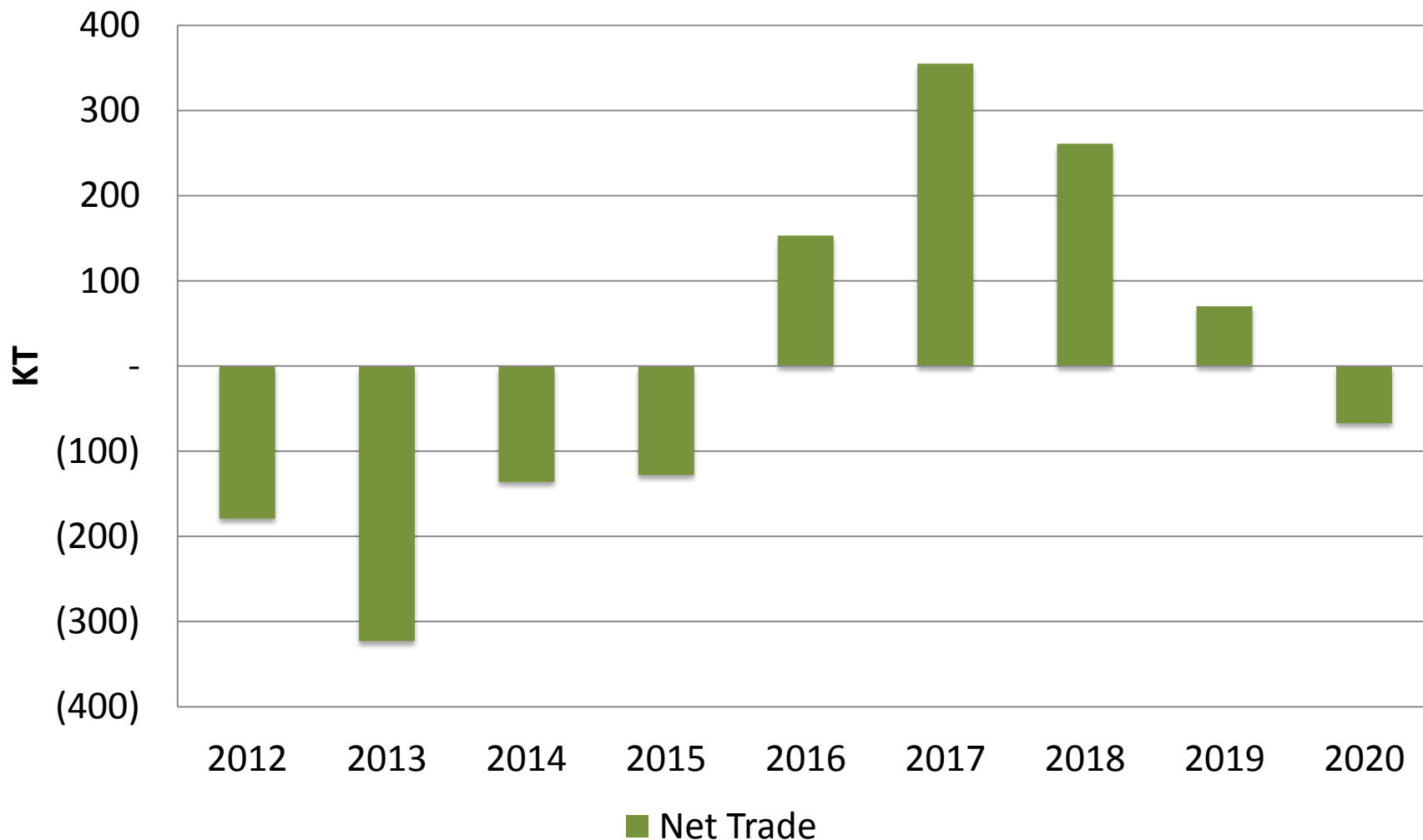


# India Paraxylene Supply Demand

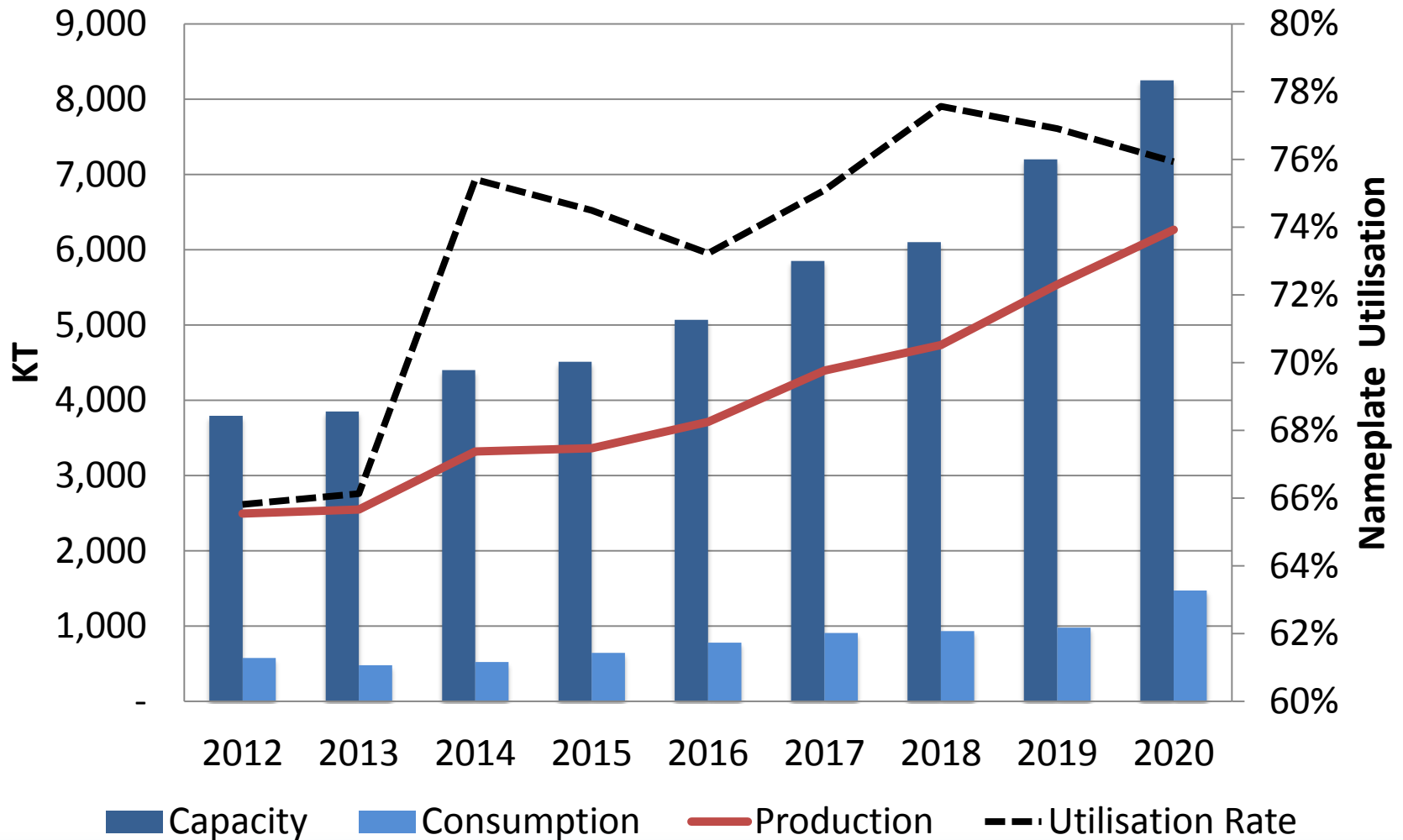




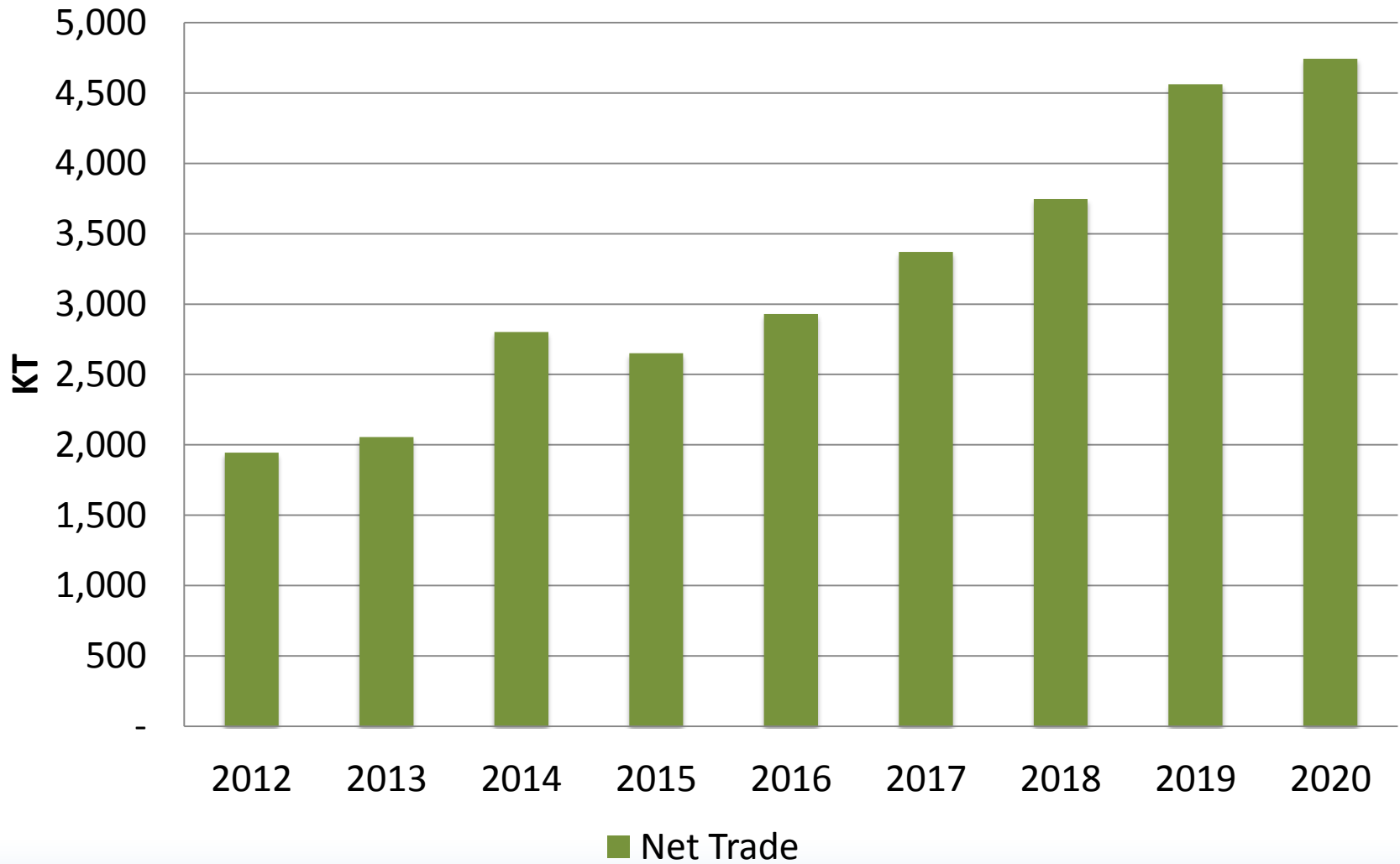
## Indian Subcontinent Paraxylene Net Trade



# Middle East Paraxylene Supply Demand



## Middle East Paraxylene Net Trade



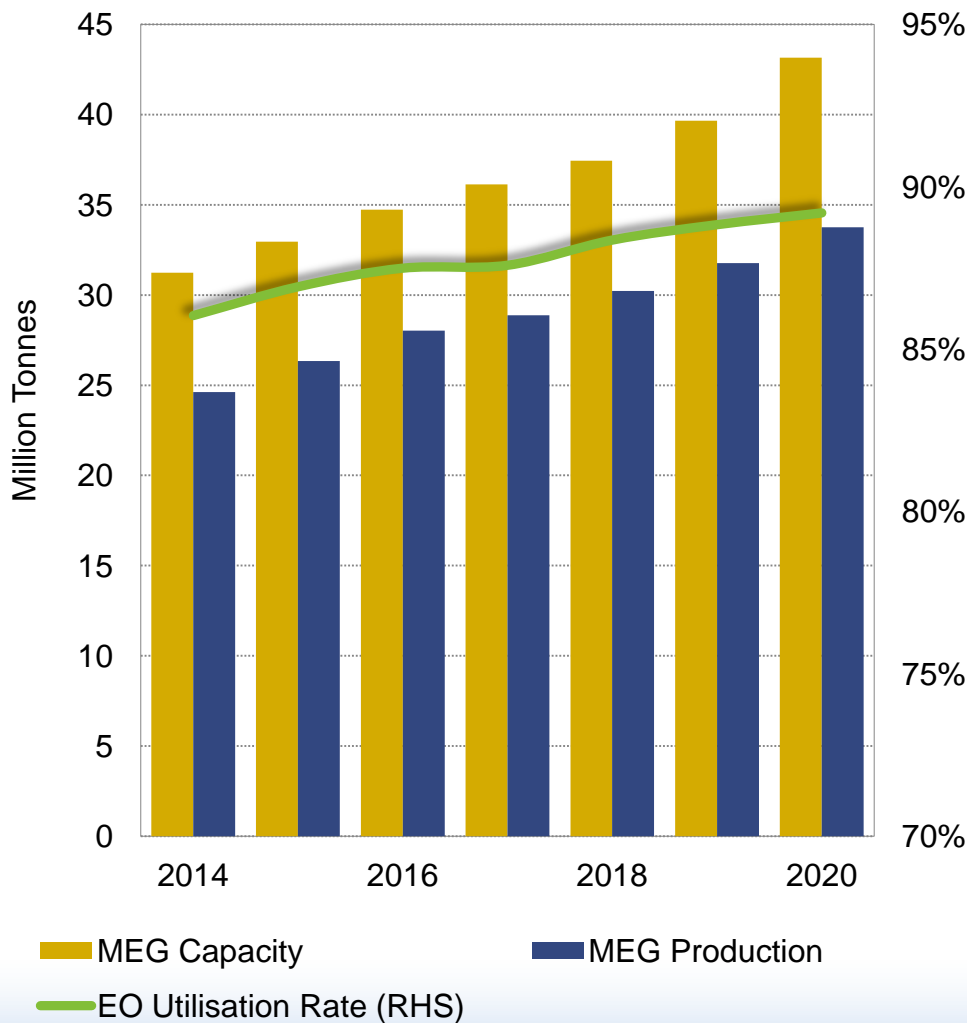
## Outlook for PX & Aromatics Projects

- Middle East and Asian projects in refining and consequently in aromatics have been delayed/postponed/cancelled, e.g.
  - ▶ Saudi Aramco – Ras Tanura
  - ▶ Qatar Petroleum – Ras Laffan
  - ▶ GS Caltex 4 - Korea
- Feedstock availability slowing down rate of project development
- Investments increasingly complex and costly
- Few, if any new condensate-based units being planned
- Still several active projects that are yet to be finalised/announced for 2020 or later. (Vietnam, Indonesia, SE Asia, Middle East) – possibly Japan ??

## Paraxylene Summary

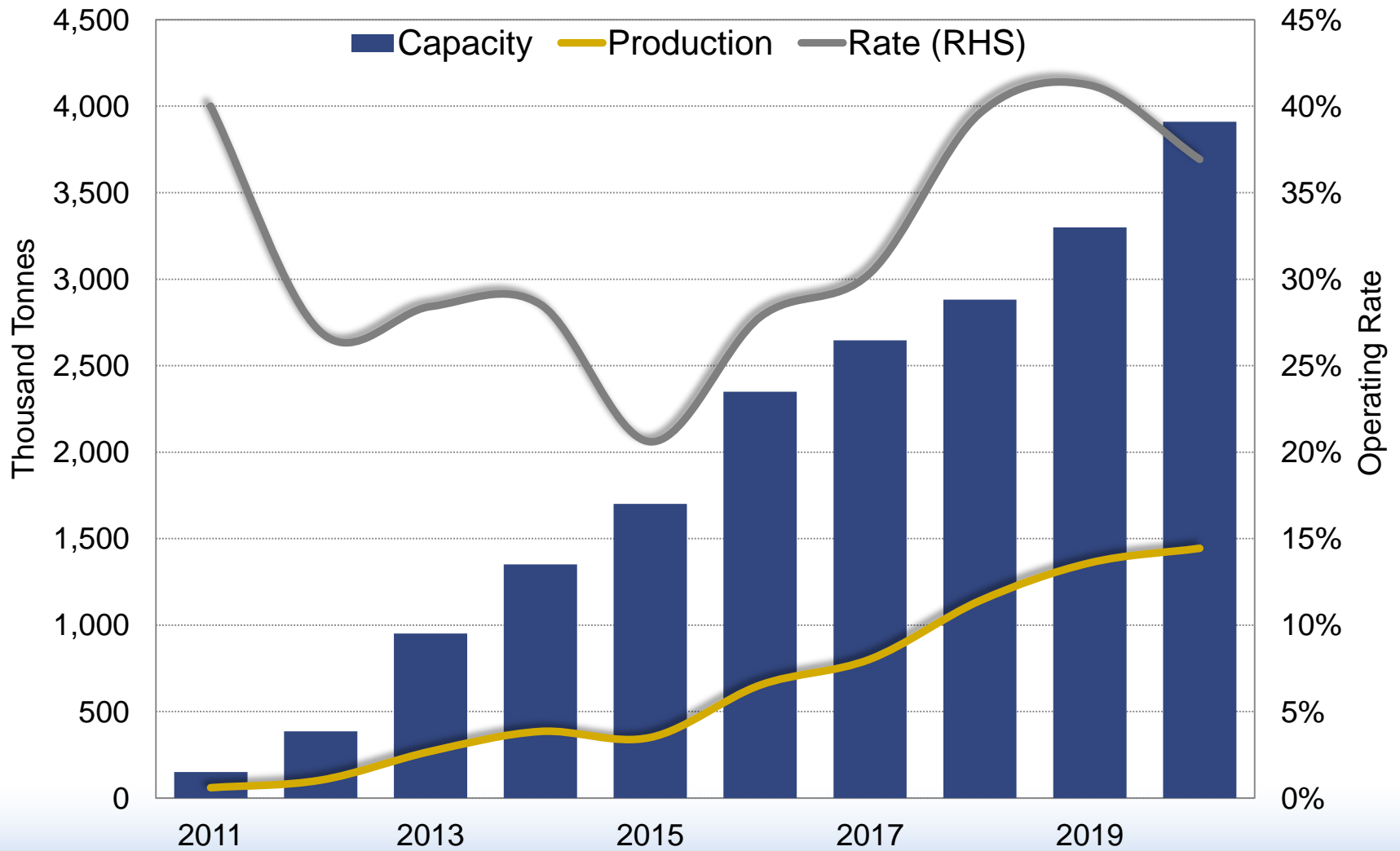
- China remains the focus of consumption growth in the medium term and is struggling to meet domestic demand, with growing deficit of 10 million tons+
- Invisibility of new China PX projects a major concern for market planning
- 2015 production cuts kept spreads higher than forecast
- Planned capacity under construction likely to keep PX market highly competitive and well-supplied until 2018/2019
- Current outages may keep physical market well balanced for most of 2016

# World MEG Supply and Demand 2014-2020

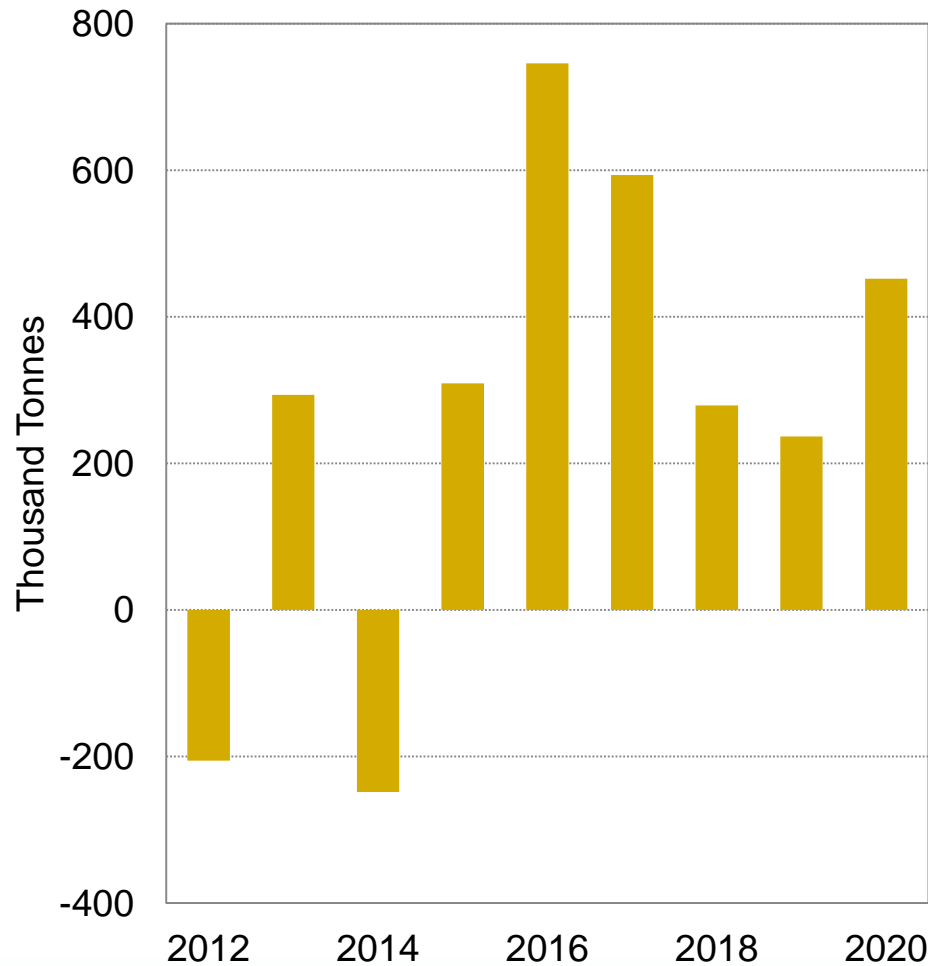


- Markets will lengthen into 2016 and also 2017. Also no improvement likely in 2018+
- Current outlook of the MEG business is moderately profitable through 2015, then weakness in 2016-2018 with surplus then a chance of balance after – This assumes demand holds in China => otherwise long to 2020/
- Most new supply sources to end 2017 are verifiable => DMO performance remains still a question.

# DMO MEG Production



# Global MEG Balances 2012-2020



- 2015 tighter through summer, but with new capacity a Q4 inventory increase expected.
- 2016 supply increases adding to surplus with high cost producers coming under pressure sourcing to China.
- 2017 some consolidation of supply but still long.
- 2018 possible start of tighter market due to delayed expansions- but unlikely due to demand downside.
- 2018 Asia ethylene pressure from US PE exports.
- 2019+ more MEG plants due on line in USA etc.



# MEG: Supply is more volatile than demand

- DMO remains uncertain – both capacity and technical.
- Low oil = low naphtha = lower ethylene cost and lower MEG prices. For new projects => tough margin projections for the low cost producers where these are far less than before. The record capex costs remain.
- Many China MEG projects expected DMO MEG and CMT0 MEG to have an advantage versus naphtha. This is not the case now but maybe later? Is \$100 oil coming back?
- Will China be more focused on viable investments with tighter credit controls.