Polyester & Intermediates Markets

Synthetic Fibres Raw Materials Committee Meeting at APIC 2013

Taipei, 10 May 2013

Hyun-Min, Kim

Tecnon OrbiChem

petrochemicals marketing and planning consulting services

APIC 2013

AGENDA

- Polyester Fibre (Filament Yarn + Staple Fibre)
- PET Packaging Resin
- PTA
- MEG
- Paraxylene
- Conclusions

Source: Tecnon OrbiChem

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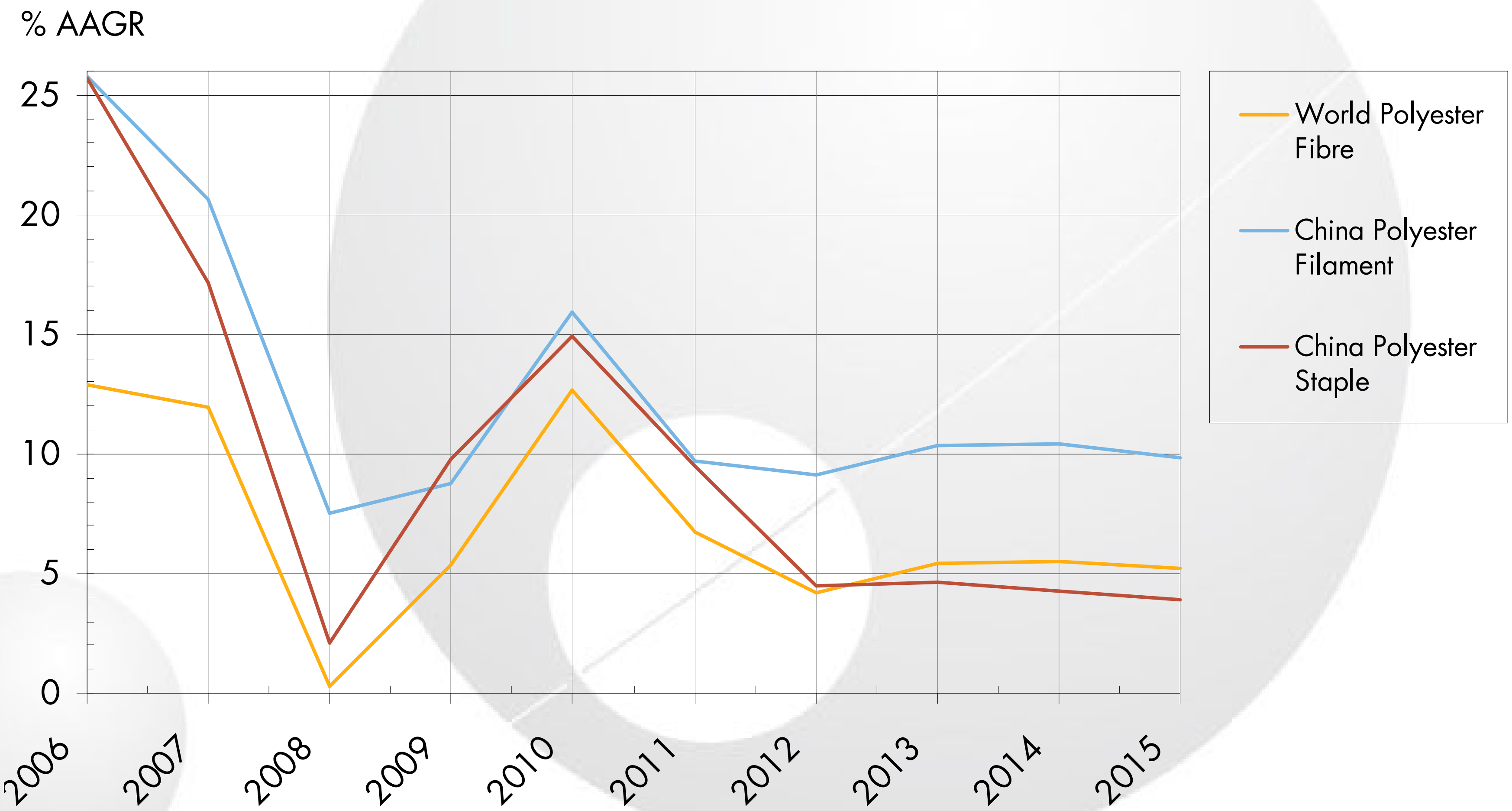
POLYESTER FIBRE GROWTH RATES



Source: Tecnon OrbiChem

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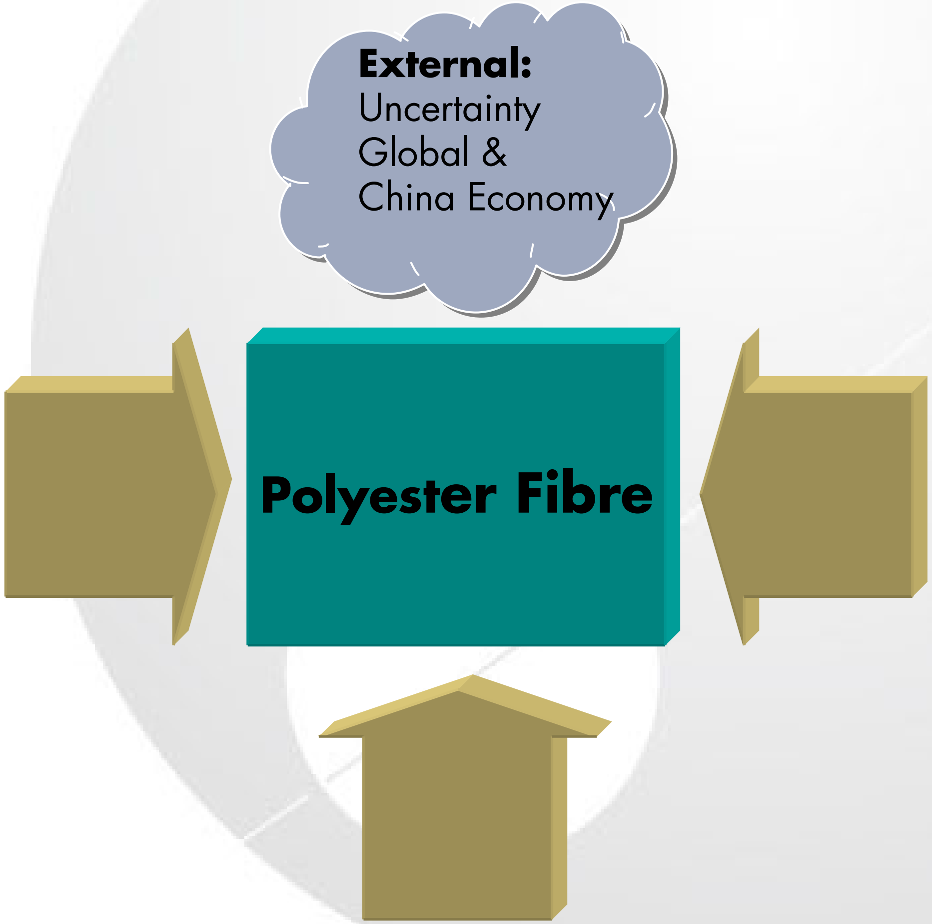
CHALLENGES IN CHINA 2012-2013



Upstream:

Volatility of feedstock prices

Downstream:

- Slow pace of textile and garments export growth
- High finished textile and garments inventories
- Weak demand for apparel in China

Internal:

Continuous large scale expansion

Source: Tecnon OrbiChem

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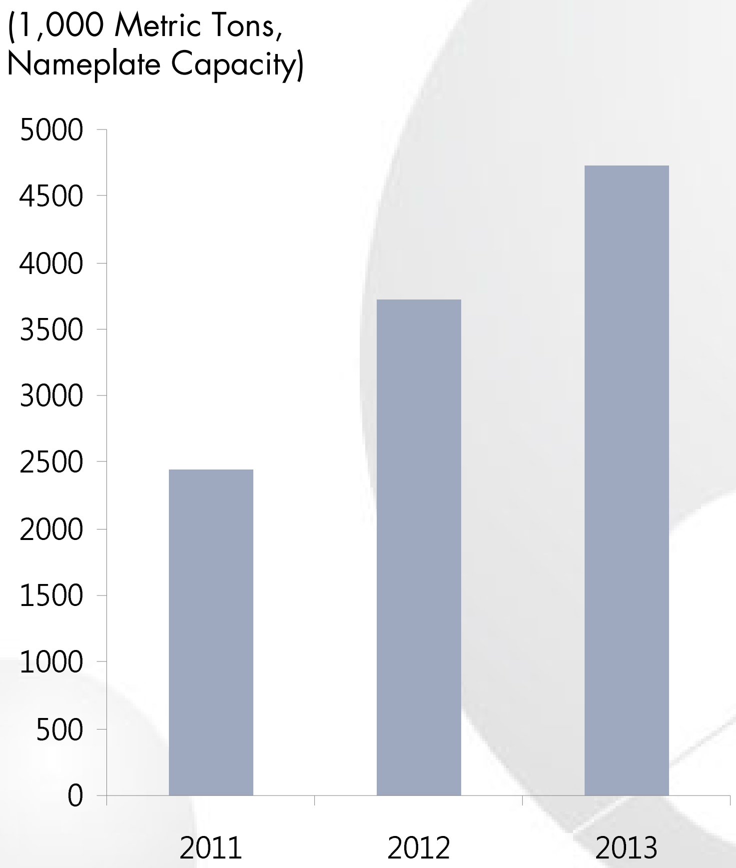
2013 POLYESTER FIBRE EXPANSIONS IN CHINA



Producer	Capacity	Start-Up	Product
Tongkun	400	Jan	PFY
Fujian Jinlun	200	Jan	PFY
Zhejiang Dragon Technology	200	Jan	PFY
Fujian Baihong	330	Feb	PFY
Zhejiang Xinfengming	500	Feb	PFY
Jiangsu Hongtai	250	Apr	PFY
Ningbo Huaxing Tyre	200	Q2	PFY
Jiangsu Hengli	400	Q2	PFY
Zhejiang Huatesi	200	H2	PFY
Fujian Jinxing	200	H2	PFY
Hangzhou Tianyuan	500	H2	PFY
Zhejiang Hongjian	400	H2	PFY
Zhejiang Southeast Space Frame	200	H2	PFY
Fujian Jinxing	100	Q2	PSF
Fujian Shanli	300	Q3	PSF
Fujian Jingwei	200	Q3	PSF
Zibo Wanjie	150	Q3	PSF
Total	**4,730**		

Source: Tecnon OrbiChem

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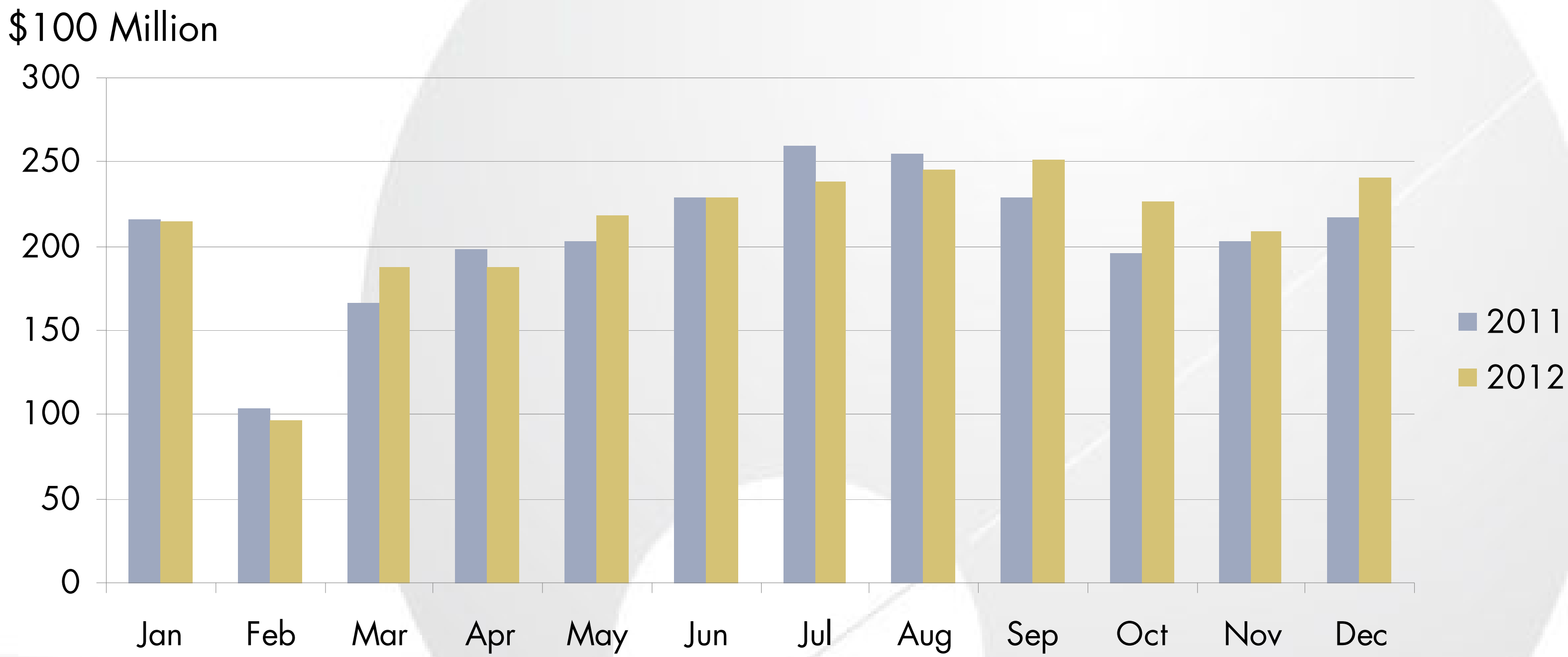
CHINA TEXTILE & GARMENT EXPORTS 2011 & 2012



- Jan-Dec 2012 export value only increased by 2.9%, on 2011
- This compares with a 20% increase from in 2010 and 2011
- Exporters are still not confident about 2013 performance
- **March 2013 export value dropped by 11%, year on year**

Source: Tecnon OrbiChem

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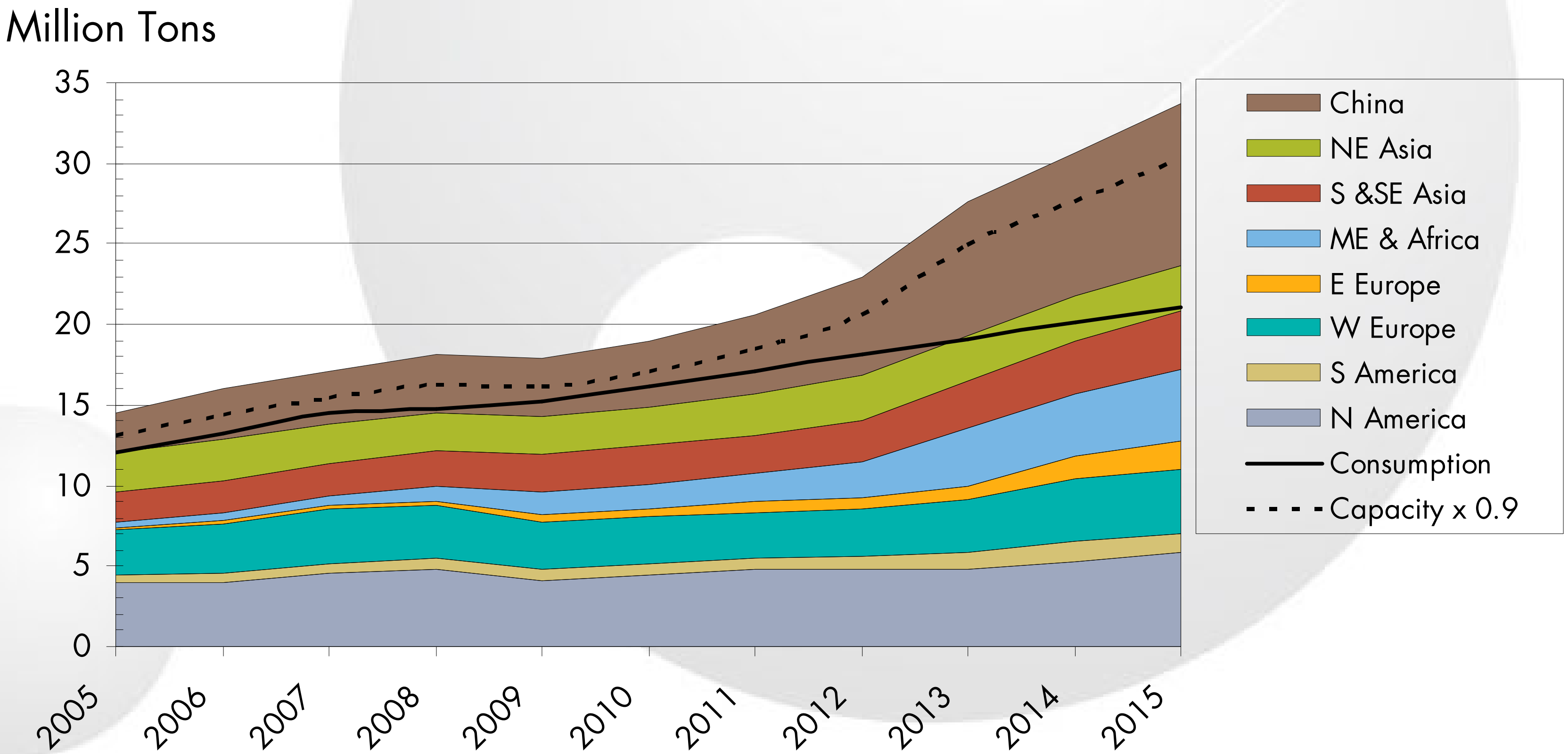
WORLD PET RESIN CAPACITY vs CONSUMPTION

- 2013 growth projected at 5.5%
- Massive new PET resin capacity is scheduled from 2013 to 2015
- Total world capacity to reach 34 million tons by 2015



Source: Tecnon OrbiChem

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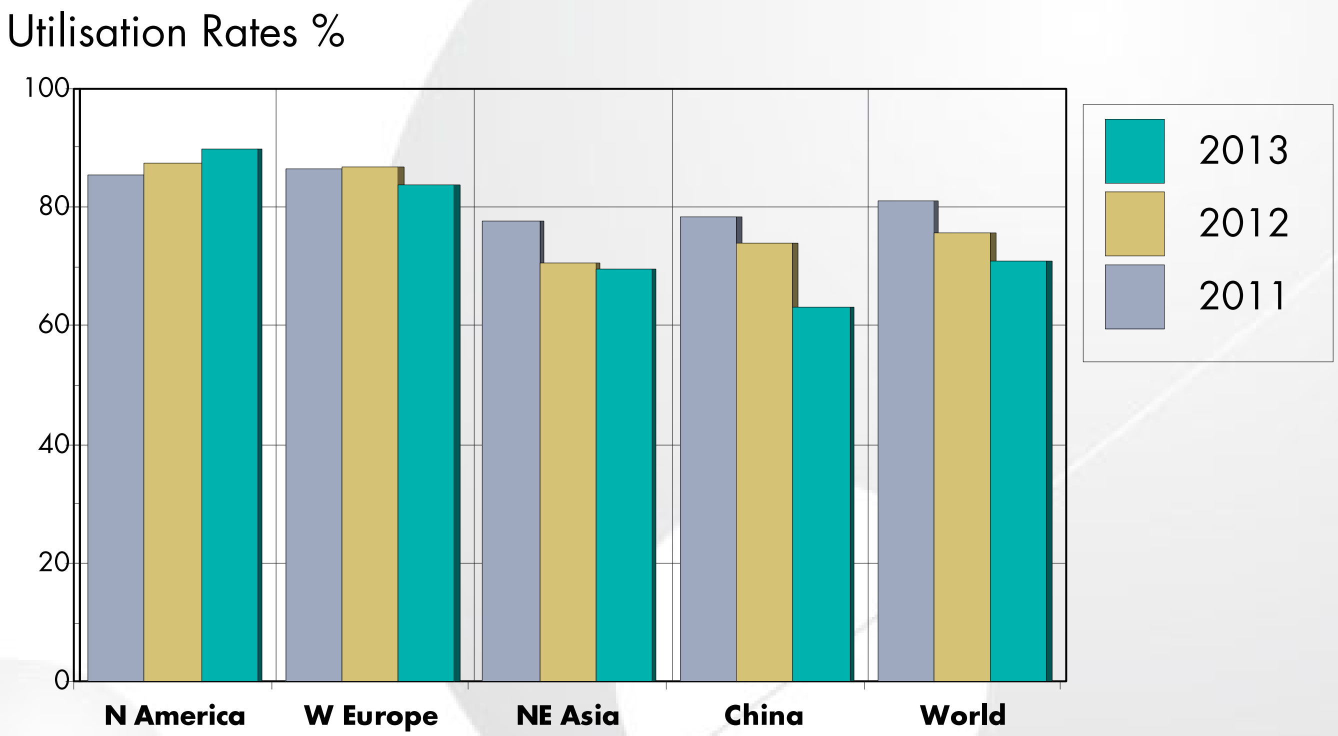
PET CAPACITY UTILISATION RATES (VIRGIN)



- China and South Korea Q1 2013 average operating rate was estimated at around 70% and 75% respectively

Source: Tecnon OrbiChem

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WORLD PET RESIN CAPACITY RANKINGS

2009	ktpa	% of Total	2013		ktpa	% of Total
M&G	1,669	9.3%	1	Indorama	3106	11.2%
Indorama	1,125	6.2%	2	DAK/Alfa Group	2059	7.4%
FENC	900	5.0%	3	M&G	1749	6.3%
DAK/Alfa Group	839	4.7%	4	SFX	1650	6.0%
Eastman	800	4.4%	5	China Resources	1300	4.7%
Invista	767	4.3%	6	FENC	1200	4.3%
Nan Ya	760	4.2%	7	Yisheng Petrochemical	1000	3.6%
La Seda	754	4.2%	8	Nan Ya	910	3.3%
SFX	750	4.2%	9	Lotte Chemical	820	3.0%
Sinopec	610	3.4%	10	Octal	750	2.7%
	8,974	**49.8%**			**14,544**	**52.5%**

Source: Tecnon OrbiChem

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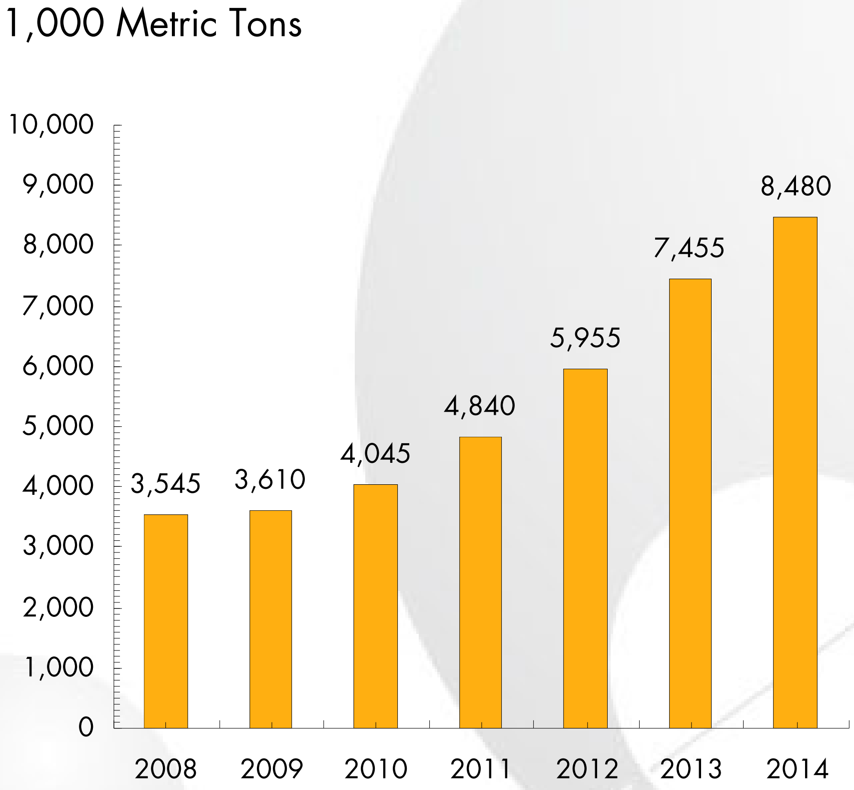
CHINA PET RESIN CAPACITY 2008-2014



New Projects	Nameplate Capacity (ktpa)	Start-up Date
Zhejiang Wankai	400	Apr 2012
China Resources	900	Jun 2012
Nanya	150	Jun 2012
Guangdong Indorama	300	Jul 2012
Yisheng Petrochemical	1,000	2013 Q2
Sanfangxiang	400	2013 Q2
HNCC Anyang Longyu	300	2013 Q3
FENC	800	2014 Q4
Zhejiang Wankai	500	2014 Q4
Total New Capacity	**4,750**	

Source: Tecnon OrbiChem

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NOT ONLY IN CHINA
- MORE PET RESIN CAPACITY EVERYWHERE

	Capacity (ktpa)	Start-Up Date
• Octal, Oman	500	2012
• Dhunseri, India	230	2012
• Indorama, Holland	190	2012
• La Seda, Italy	150	2013
• Koksan, Turkey	216	2013
• Polyplex, Turkey	300	2013
• EIPET, Egypt	420	2013
• PQS, Brazil	450	2013
• Polief, Russia	90	2013
• Ibn Rushd, KSA	420	2013
• Reliance, India	648	2013
• Lotte Chemical, UK	200	2013
Total	**~3,814 ktpa**	

Source: Tecnon OrbiChem

For the EU?

A SERIOUS THREAT TO KOREAN PET RESIN PRODUCERS?

Korea has been the largest PET resin exporter to the EU ~100-150 kton/year

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POLYESTER FIBRE & PET RESIN SUMMARY

Polyester Fibre

- Polyester fibre market is still growing in China, but the speed of growth is not as fast as in the past
- Due to Chinese and global economic uncertainty, it is unclear when polyester fibre growth returns to historical patterns
- Large scale polyester fibre capacity expansions continue into 2013 despite current overcapacity

PET Packaging Resin

- PET resin consumption is still growing in China, but overcapacity becomes dominating market issue in 2013
- Korean & Taiwanese PET resin producers will be more under pressure to compete against massive new Chinese capacity in 2013
- Competition to supply the European market will be more severe

Source: Tecnon OrbiChem

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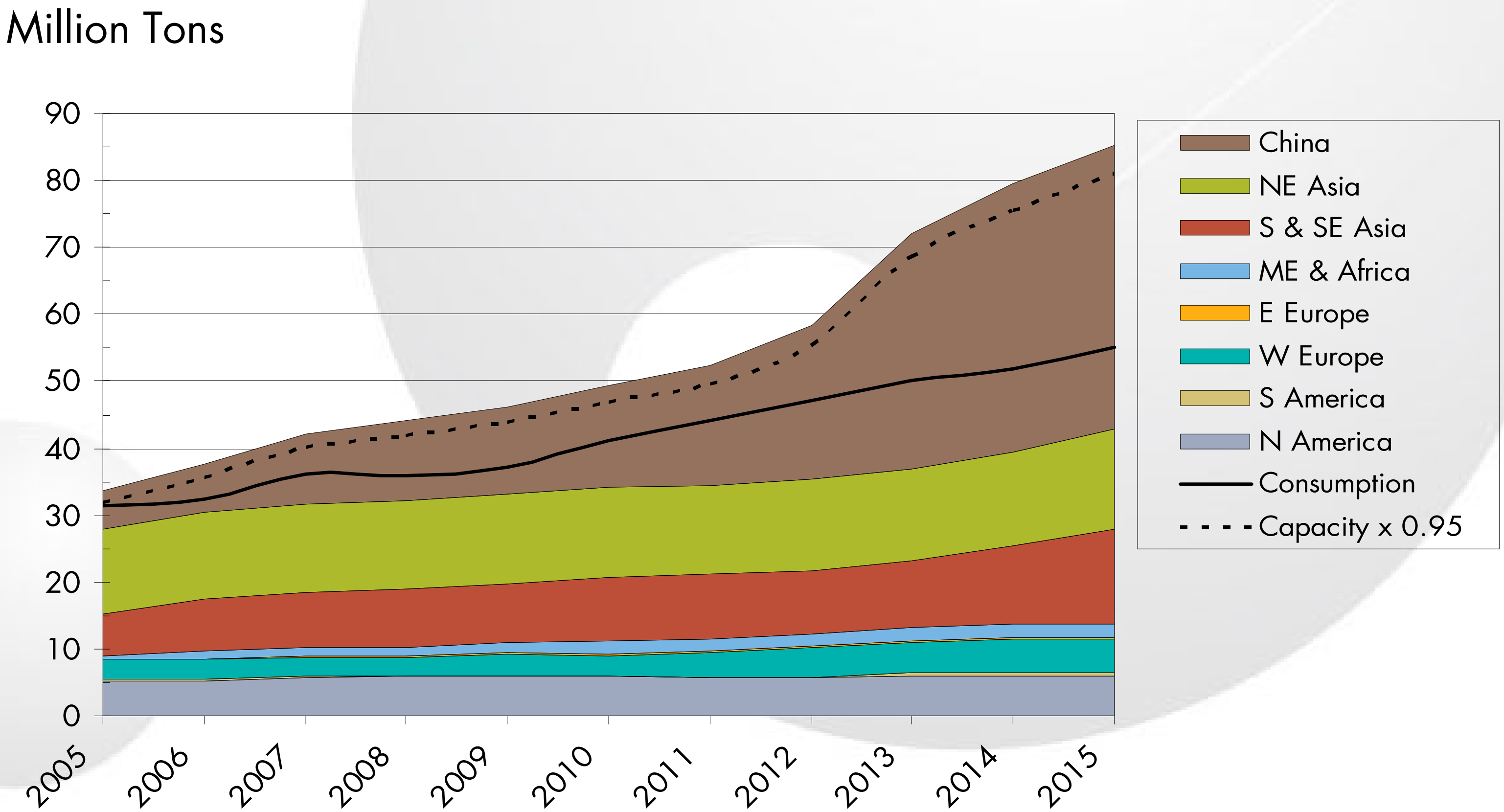
WORLD PTA CAPACITY vs CONSUMPTION

- China capacity grows from 23 to 42 million tons in 2015 (+86%)
- World consumption growth at 5.4% AAGR 2012-2015
- Overcapacity as total world capacity reaches ~85 million tons by 2015



Source: Tecnon OrbiChem

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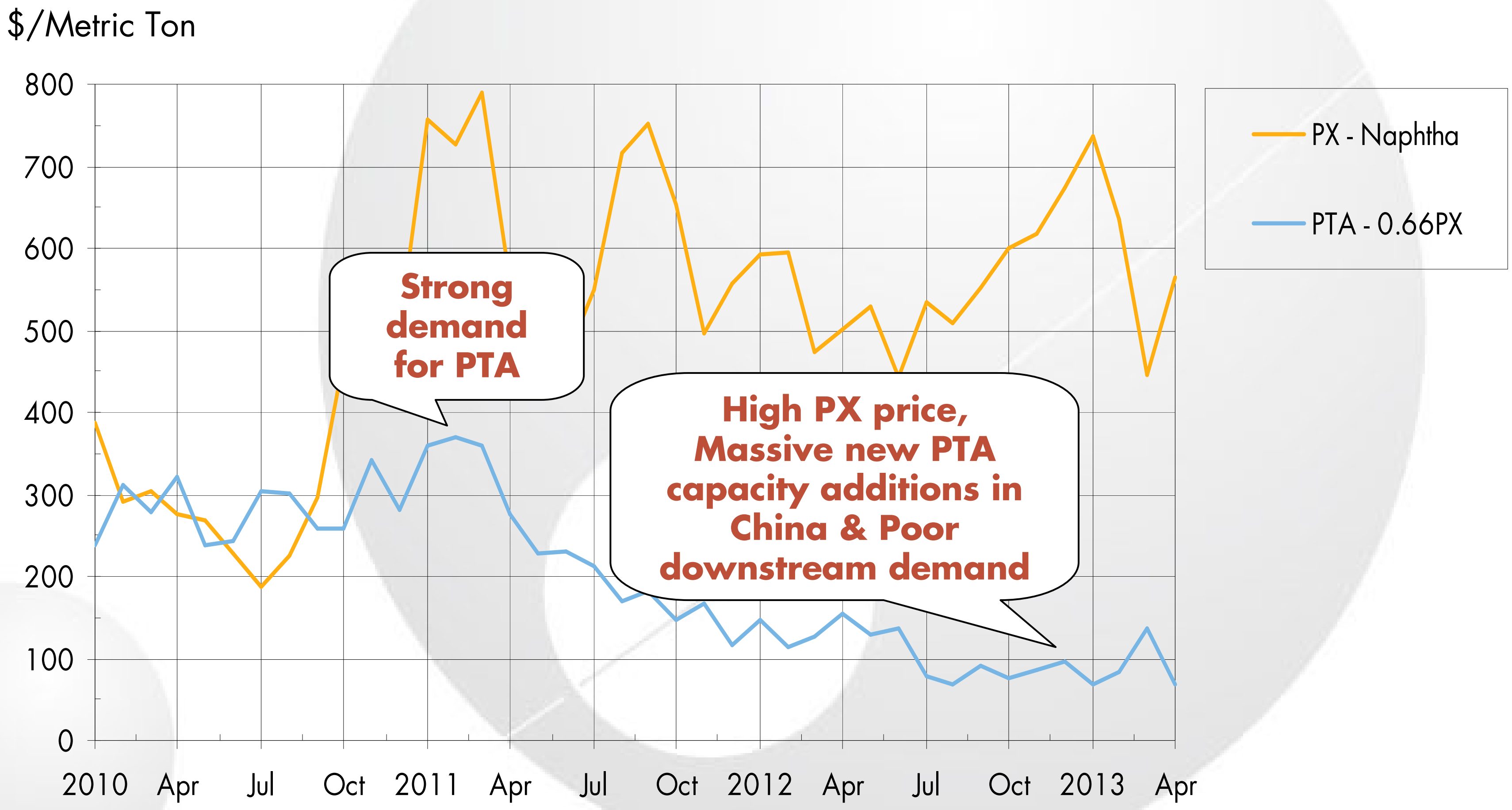
ASIA PX-PTA SPREADS 2010–2013



Source: Tecnon OrbiChem

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WORLD NEW PTA CAPACITY 2012

Company	*Location*	*Capacity (ktpa)*	*Start-Up Date*
Lotte Chemical	Ulsan, South Korea	100	Jan
BP Zhuhai Chemical	Zhuhai, China (Guangdong)	200	Jan
Oriental Petrochemical	Shanghai, China (Shanghai)	100	Jan
Artlant	Sines, Portugal	700	Mar
Zhejiang Yuandong	Shaoxing, China (Zhejiang)	1,500	May
Tuntex Petrochemical	Pinnan, Taiwan	50	Jun
Hengli Petrochemical	Dalian, China (Liaoning)	2,200	Sep
Jiaxing Petrochemical	Jiaxing, China (Zhejiang)	1,500	Sep
Hengli Petrochemical	Dalian, China (Liaoning)	2,200	Oct
PT Indorama Petrochemicals	Cilegon, Indonesia	35	Dec
Yisheng Dahua	Dalian, China (Liaoning)	3,000	Dec
Total		**11,585**	
China		**10,700**	

All Chinese new PTA capacity in 2012 is integrated to Polyester fibre / PET resin, except BP Zhuhai Chemical

Source: Tecnon OrbiChem

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WORLD NEW PTA CAPACITY 2013

Company	Location	Capacity (ktpa)	Start-Up Date
CEPSA Quimica	Montreal-East, Canada	50	Jan
Petroquimica Suape (PQS)	Suape, Brazil	700	Mar
FCFC	Ningbo, China (Zhejiang)	300	Mar
Zhejiang Yisheng Petrochemical	Yangpu, China (Hainan)	2,200	Mar
Oriental Petrochemical	Shanghai, China (Shanghai)	100	Jun
Xianglu Petrochemical	Zhangzhou, China (Fujian)	4,500	Q3
Jiangsu Honggang Petrochemical	Lianyungang, China (Jiangsu)	1,500	Q4
Ibn Rushd	Yanbu, Saudi Arabia	280	Q4
Reliance Industries	Dahej, India	1,150	Q4
Total		**10,780**	
China		**8,600**	

New Chinese PTA capacity in 2013 is integrated to Polyester fibre or PET resin

Source: Tecnon OrbiChem

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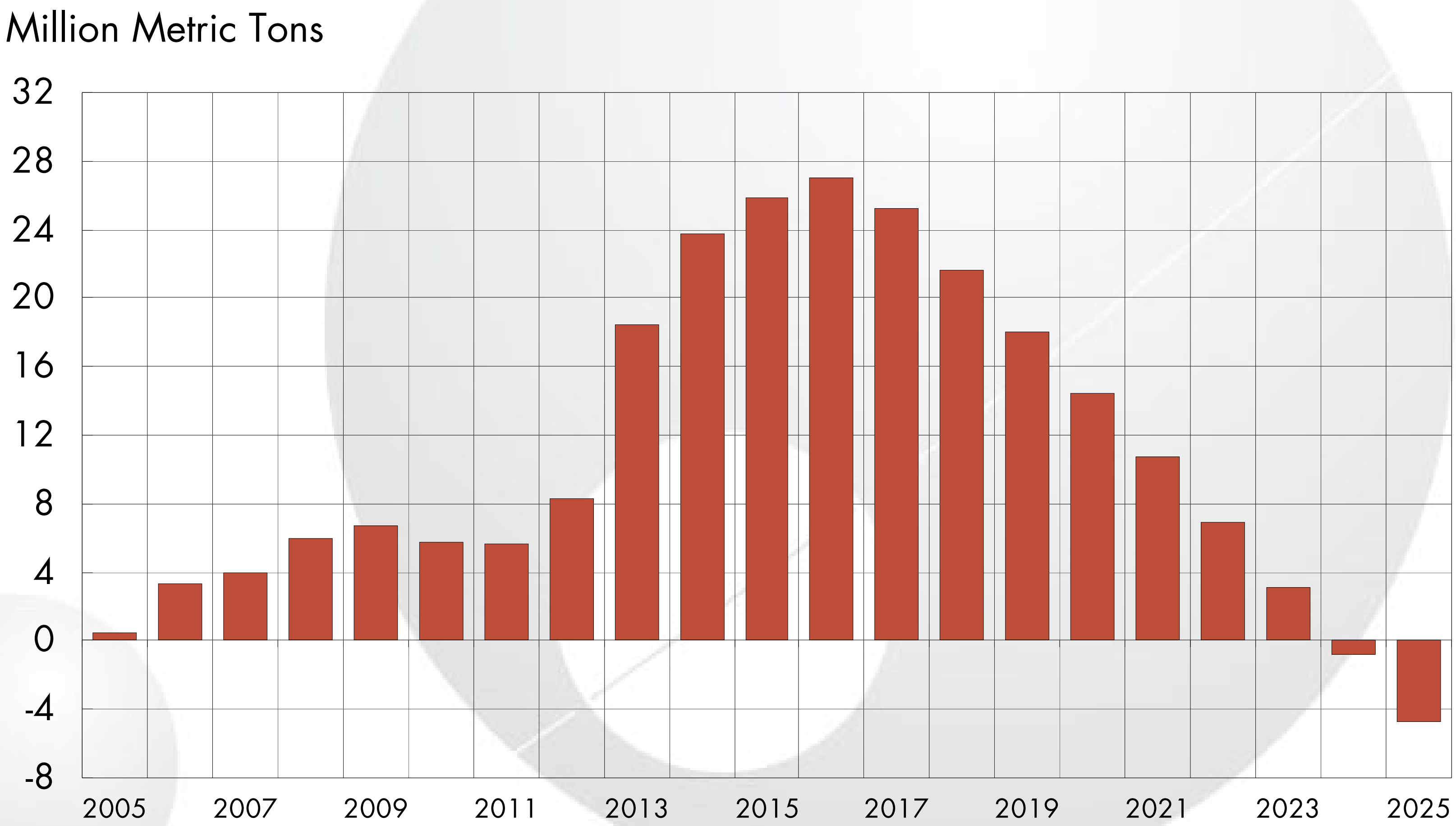
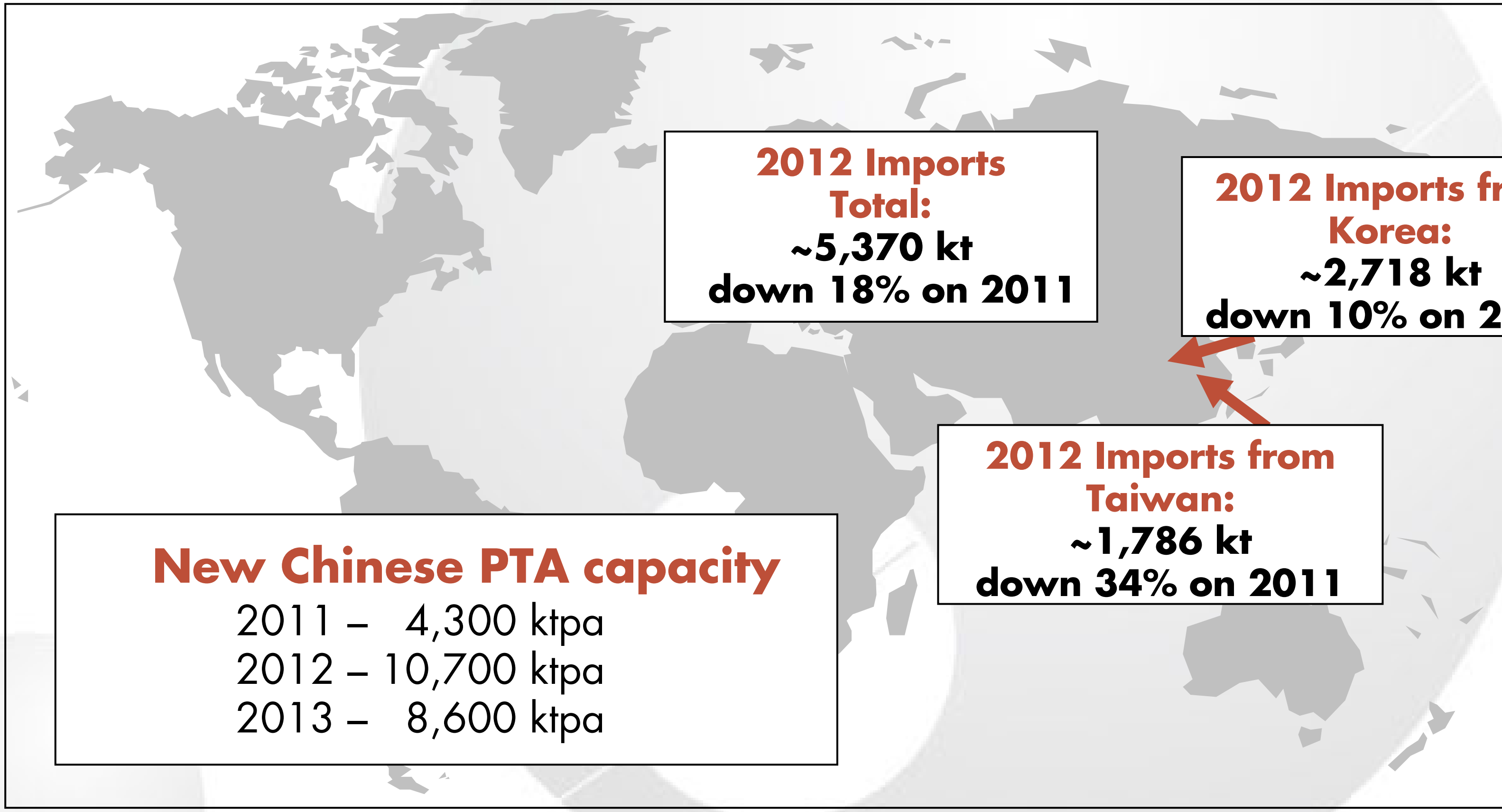
WORLD SURPLUS PTA CAPACITY (95%)



Source: Tecnon OrbiChem

CHINA 2012 PTA IMPORTS vs NEW CAPACITY



- **2013 Jan-Feb**, China PTA import volume continued to drop by 48%, year on year, to 590 ktons

Source: Tecnon OrbiChem

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PTA SUMMARY

- PTA capacity is expanding faster than demand and margins have been eroded.
- China's need for imported PTA is shrinking rapidly, impacting South Korean and Taiwanese export significantly. PTA exports from China will take more time as producers are focused on domestic market
- PX-linked formula for PTA are being implemented in Asia and Middle East, but in China it is hard changing from the PTA import spot benchmark
- The fundamentals of supply/demand continue to paramount in Chinese PTA markets, but PTA futures on the Zhengzhou commodity exchange have had an increasing influence on spot prices, introducing extreme volatility to the market

Source: Tecnon OrbiChem

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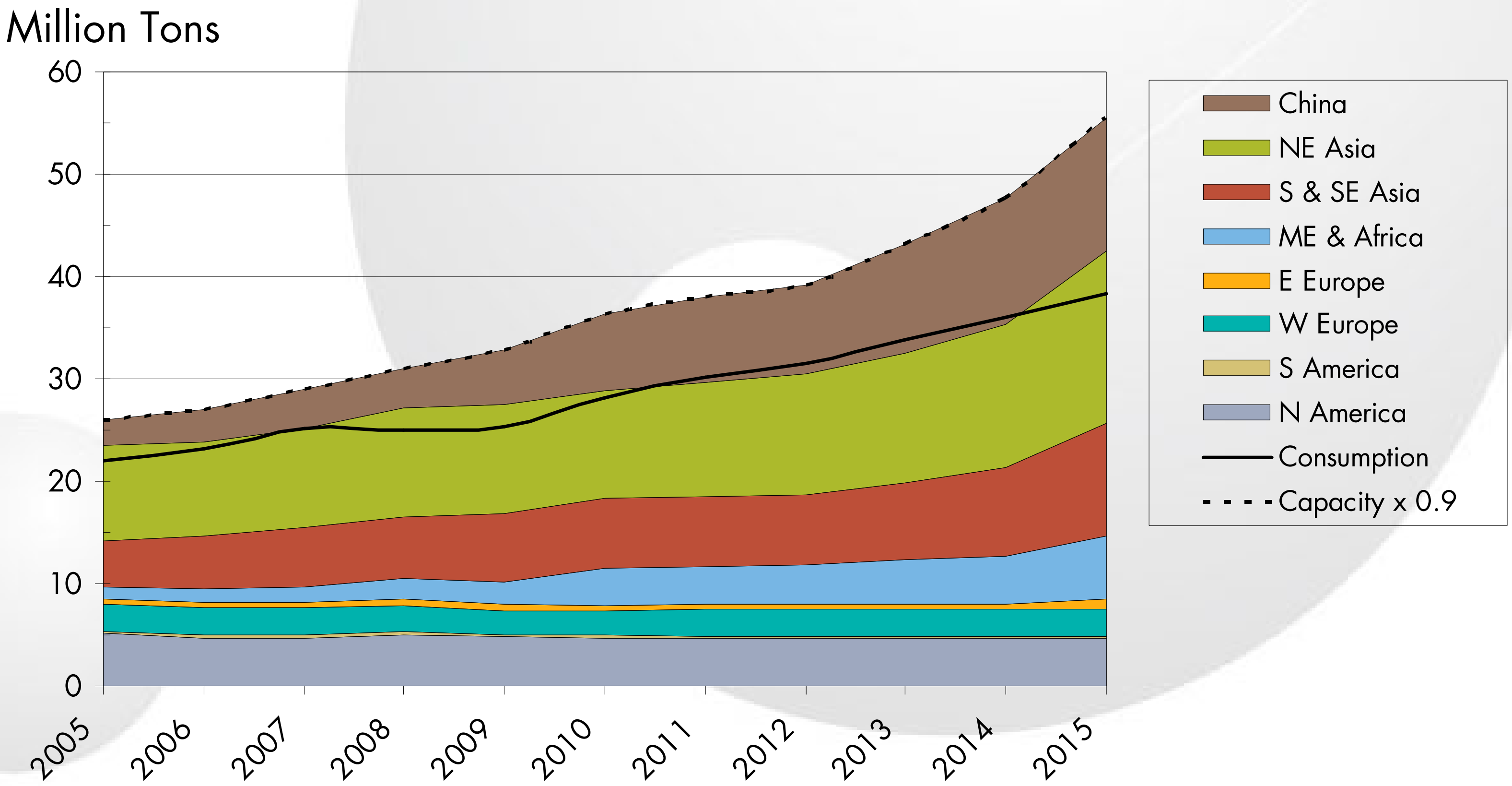
WORLD PARAXYLENE CAPACITY vs CONSUMPTION

- World capacity grows from 39 to 55 million tons in 2015 (+42%)
- World consumption growth at 6.7% AAGR 2012-2015
- South Korea will add 5.1 million tpa capacity in 2013-2014



Source: Tecnon OrbiChem

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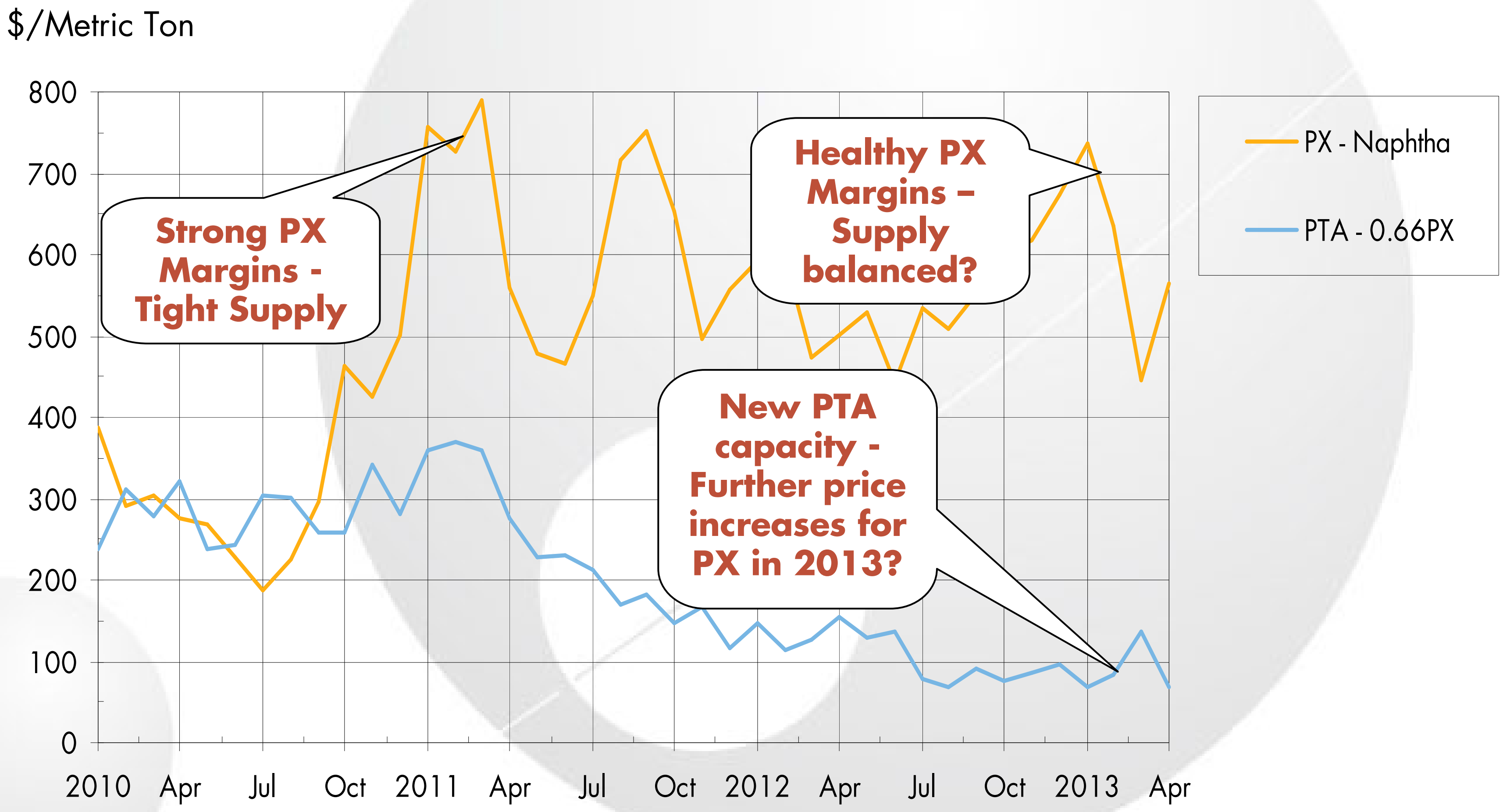
ASIA PX-PTA SPREADS 2010–2013



Source: Tecnon OrbiChem

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WORLD NEW PARAXYLENE CAPACITY 2013

Company	Location	Capacity (ktpa)	Start-Up Date
HC Petrochem	Daesan, South Korea	800	Jan
Dragon Aromatics	Zhangzhou, China (Fujian)	1,600	Apr
ONGC Mangalore Petrochemicals	Mangalore, India	920	Q2
Naftek (Sonatrach)	Skikda, Algeria	220	Q3
SATORP	Al Jubail, Saudi Arabia	700	Q3
Byco Oil Pakistan	Lasbela, Pakistan	100	Q3
Fujia Dahua Petrochemical	Dalian, China (Liaoning)	700	Q3
PetroChina Sichuan Petrochemical	Pengzhou, China (Sichuan)	650	Q3
Hainan Refinery & Chemical	Yangpu EDZ, China (Hainan)	650	Q4
Total		**6,340**	
China		**3,600**	

Source: Tecnon OrbiChem

WORLD NEW PARAXYLENE CAPACITY 2014

Company	*Location*	*Capacity (ktpa)*	*Start-Up Date*
Yasref	Yanbu, Saudi Arabia	700	Q1
Jurong Aromatics Corporation	Jurong Island, Singapore	800	Q2
Ulsan Aromatics	Ulsan, South Korea	1,000	Q3
Samsung Total Petrochemical	Daesan, South Korea	1,000	Q3
SK Energy	Incheon, South Korea	1,300	Q3
GS Caltex	Yeosu, South Korea	1,000	Q4
Total		**5,800**	

2015 – 6.8 million tons of new Paraxylene capacy on-stream

Source: Tecnon OrbiChem

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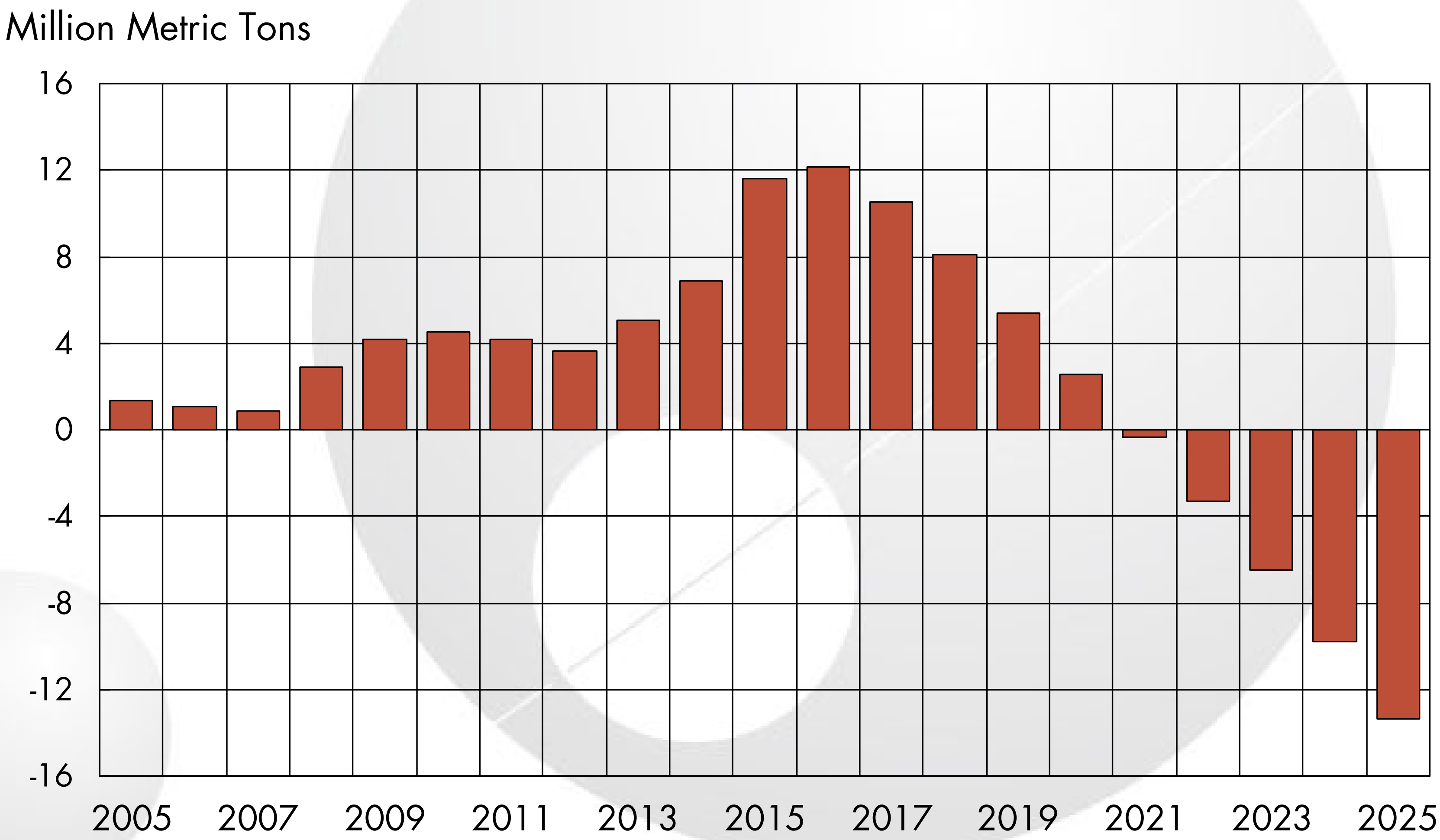
WORLD SURPLUS PARAXYLENE CAPACITY (90%)



Source: Tecnon OrbiChem

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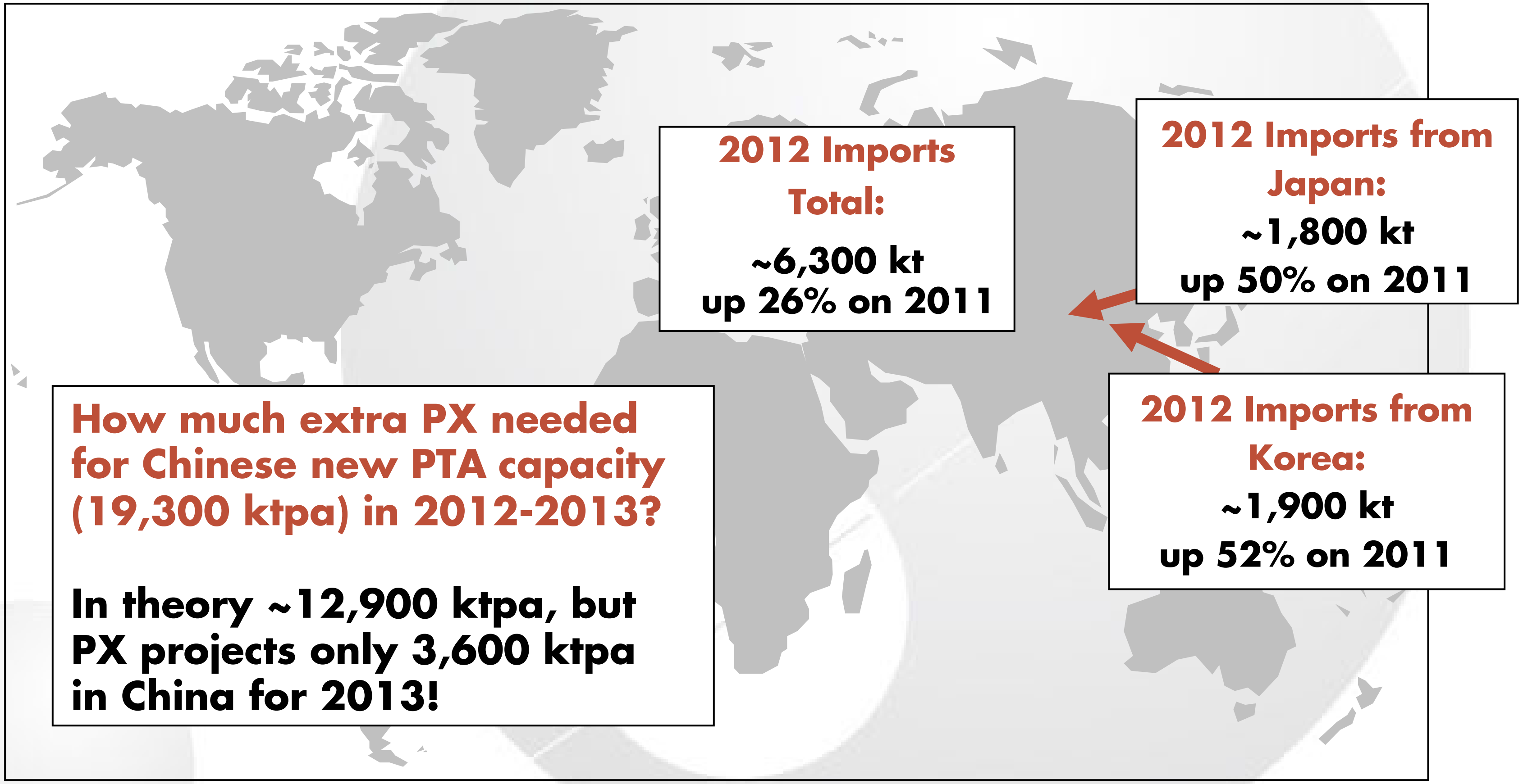
CHINA 2012 PX IMPORTS vs NEW CAPACITY



- **Q1 2013,** China PX import volume continued to be increased by **54.5%**, year on year, to **2,254 ktons**

Source: Tecnon OrbiChem

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PARAXYLENE SUMMARY

- Rapid expansion of PTA capacity in China has begun to stretch available supplies of Paraxylene in Asia
- PX capacity addition as planned should be sufficient to match polyester growth rates but does not match planned new PTA capacity growth, PTA utilisation rates are likely to suffer
- Paraxylene margins should remain strong in 2013
- China PX imports likely to increase in volume terms
- New paraxylene capacity is expected mainly in Asia and Middle East for the near future

Source: Tecnon OrbiChem

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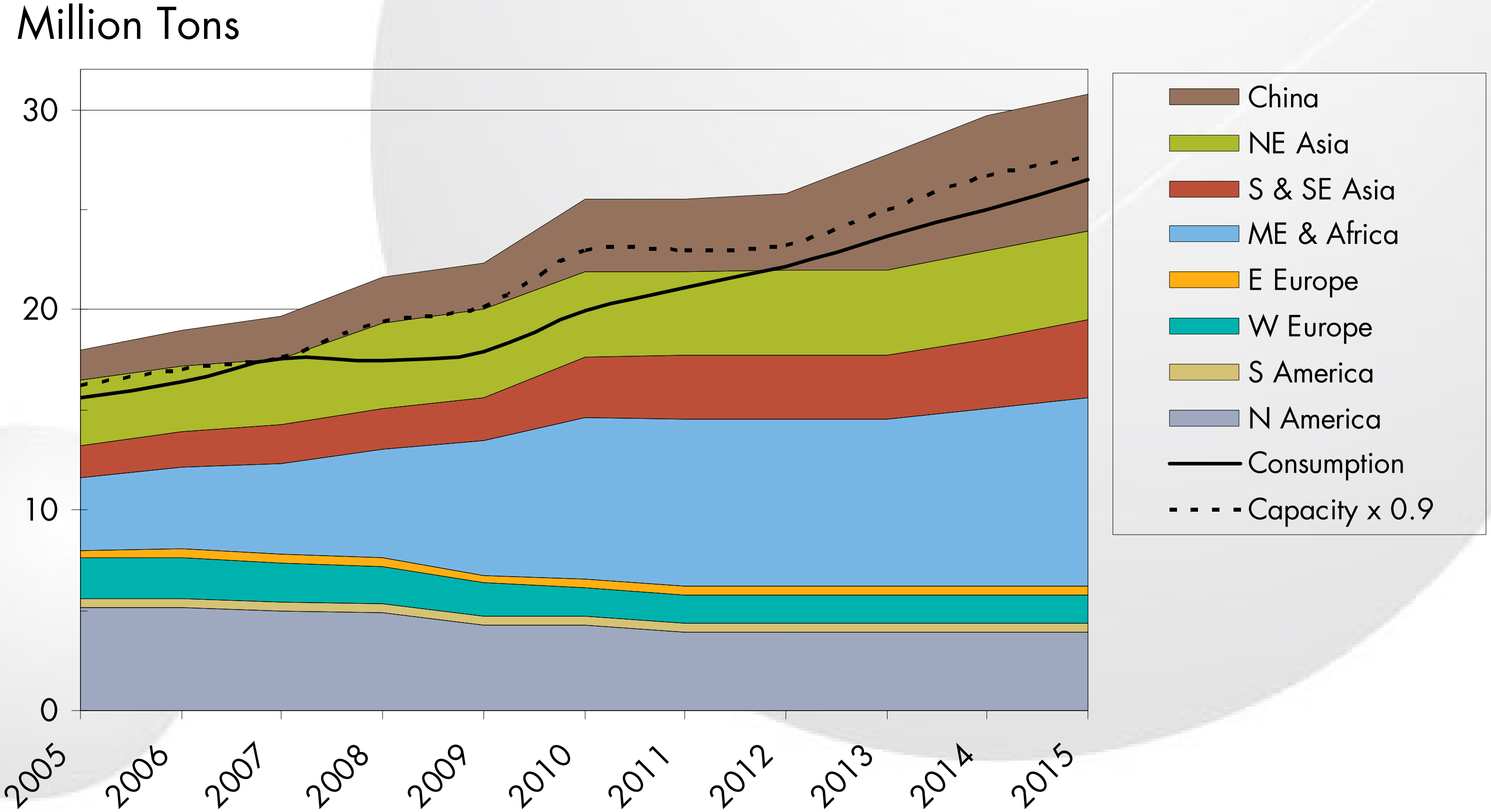
WORLD MEG CAPACITY vs CONSUMPTION

- New capacity mainly coming from China in 2013
- World consumption growth at 6.2% AAGR 2012-2015
- In comparison with PTA, MEG has much less pressure from overcapacity



Source: Tecnon OrbiChem

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WORLD NEW MEG CAPACITY 2013-2014

Company	Location	Capacity (ktpa)	Start-Up Date
2013			
Qianxixian Qianxi Coal Chem	Guizhou, China (Guizhou)	300	Q1
Ningbo Heyuan Chemical	Ningbo, China (Zhejiang)	500	Q2
Boylan Investment Group	Xilinguole, China (Nei Mongol)	200	Q3
Sinopec Wuhan	Hubei, China (Hubei)	380	Q3
Petrochina Pengzhou	Pengzhou, China (Sichuan)	360	Q3
HNCC Luoyang Yongjin	Luoyang, China (Henan)	200	Q4
China Man-Made Fibre	Ta-She, Taiwan	200	Q4
Total		**2,140**	
China		**1,940**	
2014			
Reliance Industries	Dahej, India	720	Q3
Total		**720**	

Source: Tecnon OrbiChem

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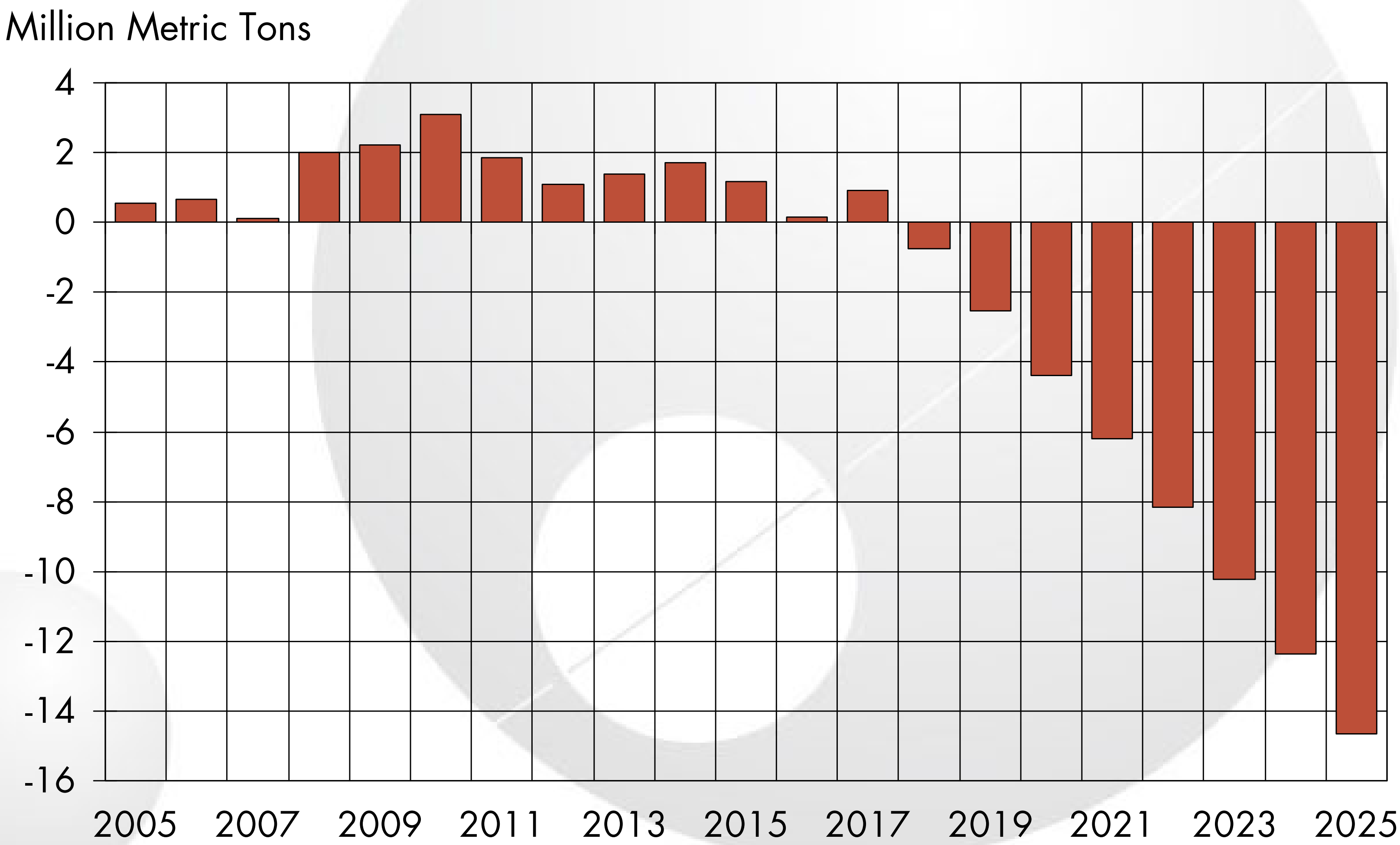
WORLD SURPLUS MEG CAPACITY (90%)



Source: Tecnon OrbiChem

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MEG SUMMARY

- Ethylene capacity in the USA will be expanded significantly due to shale gas deposits and the low cost advantage these bring
- It is expected that probably three new MEG plants, one of 1.0-1.5 million tpa and two each of 500 ktpa, will be built in the USA by 2017/18
- In comparison with PTA, MEG has much less pressure from overcapacity issue
- New MEG projects are slated to come on stream post 2015 in the Middle East, but low-cost gas feedstock is limiting and delaying capacity expansions in some countries
- The viability of coal-based plants in China is now doubtful, due to environmental, cost and quality issues being raised

Source: Tecnon OrbiChem

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CONCLUSIONS

- New Government Stimulus Policy in China
- Market players in Asia are still not confident about 2013 Polyester fibre and PET resin business performance due to global economic conditions as well as massive new capacity in China in 2013
- Rapid expansion of PTA capacity in Asia, especially in China, has begun to stretch available supplies of PX and margins have been squeezed
- PX capacity addition as planned should be sufficient to match polyester growth rates but does not match planned new PTA capacity growth
- In comparison with PTA, MEG has much less pressure from overcapacity issue, and may see some reasonable margins in 2013

Source: Tecnon OrbiChem

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