

Powered by Data, Driven by Insight

APIC 2016 Presentation | 19 May

2025: The Petrochemical Odyssey

Journey with ICIS as we examine the past, present
and future of the petrochemical industry





Powered by Data, Driven by Insight



Navigate through price uncertainty with ICIS pricing data and market intelligence



Pricing reports

Benchmark prices (spot or contract), including market commentaries on the latest deals, transactions and price drivers



Real-time News

24-hour global coverage of chemicals news, including updates on plant capacities, output, and shutdowns, keeping you informed of market developments as they happen



Price forecasts

Monthly forecasts for selected commodities showing a 12-month rolling price forecast, trade balances and market sentiment

Withstand market volatility with deep insight and tools to help you plan



Supply and Demand Database

An end-to-end perspective across the global petrochemical and refinery supply chain. Data includes import and export volumes, consumption, plant capacities and production – from 1978 up to 2030 – by product, country and region



Scenario Study: Demand – The New Direction for Profit

Special report addressing critical things to know to survive and prosper in today's chaotic petrochemical markets



Consulting Service

Tailored solutions based on your unique business needs – from research and due diligence to investment analysis and portfolio optimisation

Enquire about our products and services



ICIS price forecast reports

Supply, demand and price trends at a glance



ICIS price forecast reports provide a clear view of prices and supply and demand trends for the next 12 months. Packed with vital information, reports include everything you need to assess where the market is heading and the impact or opportunity that presents for your business.

How price forecast reports can help you

■ Understand the market

Use ICIS price forecast reports to understand where the market is heading and identify the risks and the opportunities for your business. What are the major demand developments for your product?

■ Safeguard commercial decisions

Use market information to make better-informed business decisions relating to supply and demand. Learn about changes in market capacities. What factors will affect supply for you?

■ Budgeting and planning

Whether you are planning how much you will be spending in the short-to-medium, or even long term, use the price forecast reports to help assess future prices for your product. What will the price of your product be in six months' time?

Price forecast reports
currently available

	Asia	Europe	USA
Polypropylene	✓	✓	✓
Polyethylene	✓	✓	✓
Benzene/Styrene	✓	✓	✓
Polystyrene		✓	

New feature: Price Forecast Window

ICIS price forecasts are now available on the Dashboard channel using the Price Forecast Window which will enable users to:

- Chart the price forecast against the last (rolling) 12 months of related price history
- Plot the last 12 months to view forecast progression and ICIS forecast accuracy
- Convert data into different currencies and units and download this data into Excel in order to easily enter into your own calculations

VCMStudy.ir



The New (And Old) Demand And Supply Drivers

Agenda

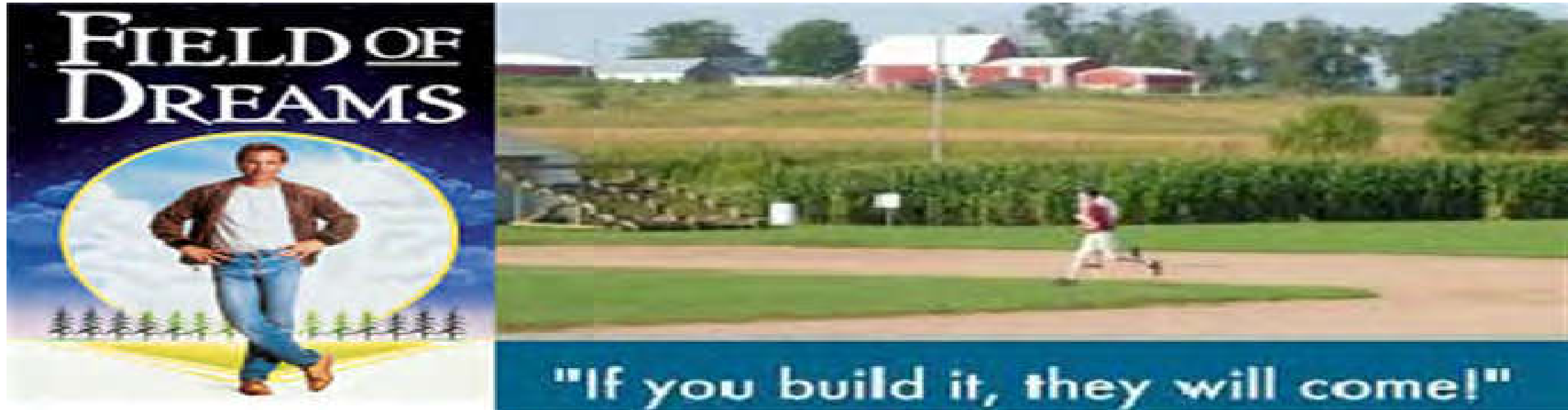
The global economy is moving in new directions

China's move to self-sufficiency creates supply gluts

A long-term outlook for China

A need to return to demand-led business models

The supply-driven model no longer works

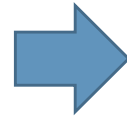


- ▶ A paradigm shift is under way in the global economy, as well as in the global petrochemical markets
- ▶ Having expected this, we successfully forecast the slowdown in the Chinese economy and the collapse of oil prices
- ▶ Stimulus hangover, a lot of it badly spent, has left big supply overhangs and so the loss of pricing power

The rise and fall of the Economic Supercycle

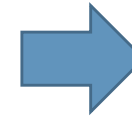
**1980s –
early 1990s**

Baby boomers
come of age.
Demand surges
for products
made from oil.



1989

Collapse of the Berlin
Wall & reunification
of Germany.
Integration of Eastern
Europe drives jobs &
consumption.



1992

China's rise following
the Deng Xiaoping
'Southern Tour' and
China's admission to
the World
Trade
Organisation
in 2001.



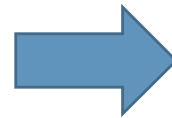
Demand: The New Direction for Profit

The rise and fall of the Economic Supercycle

**Mid
1990's
to 2005**



Babyboomers peak & earn more money by quantity than any other demographic in history.



2005



Babyboomers start to retire. Spending power decreases. Savings hit by dot com stock market collapse (1999-2001) & sub prime crisis (2008).



2007-2014

Policymakers' stimulus programmes lead to a \$57tn increase in global debt levels.

\$57tn



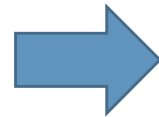
Demand: The New Direction for Profit

The rise and fall of the Economic Supercycle



Jan 2014

China's economic reforms accelerate as it unwinds the biggest credit bubble in world economic history



Sep 2014

Oil price begins to slide with Brent falling to \$57 per barrel by the end of 2014.



2015

Global GDP falls by a record \$3.8tn, according to IMF data.

\$3.8tn



Demand: The New Direction for Profit

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The global economy is moving in new directions

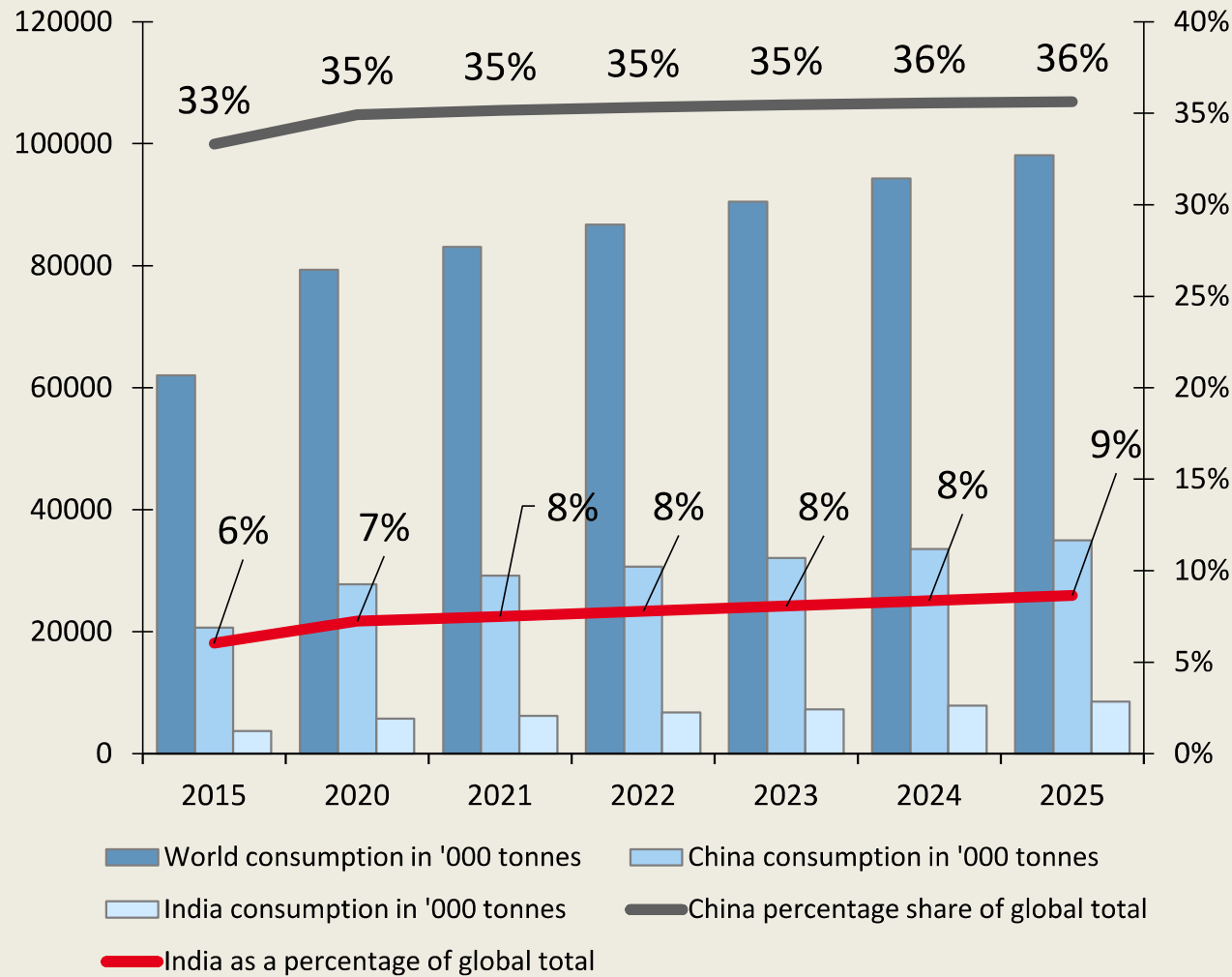
China's move to self-sufficiency creates supply gluts

A long-term outlook for China

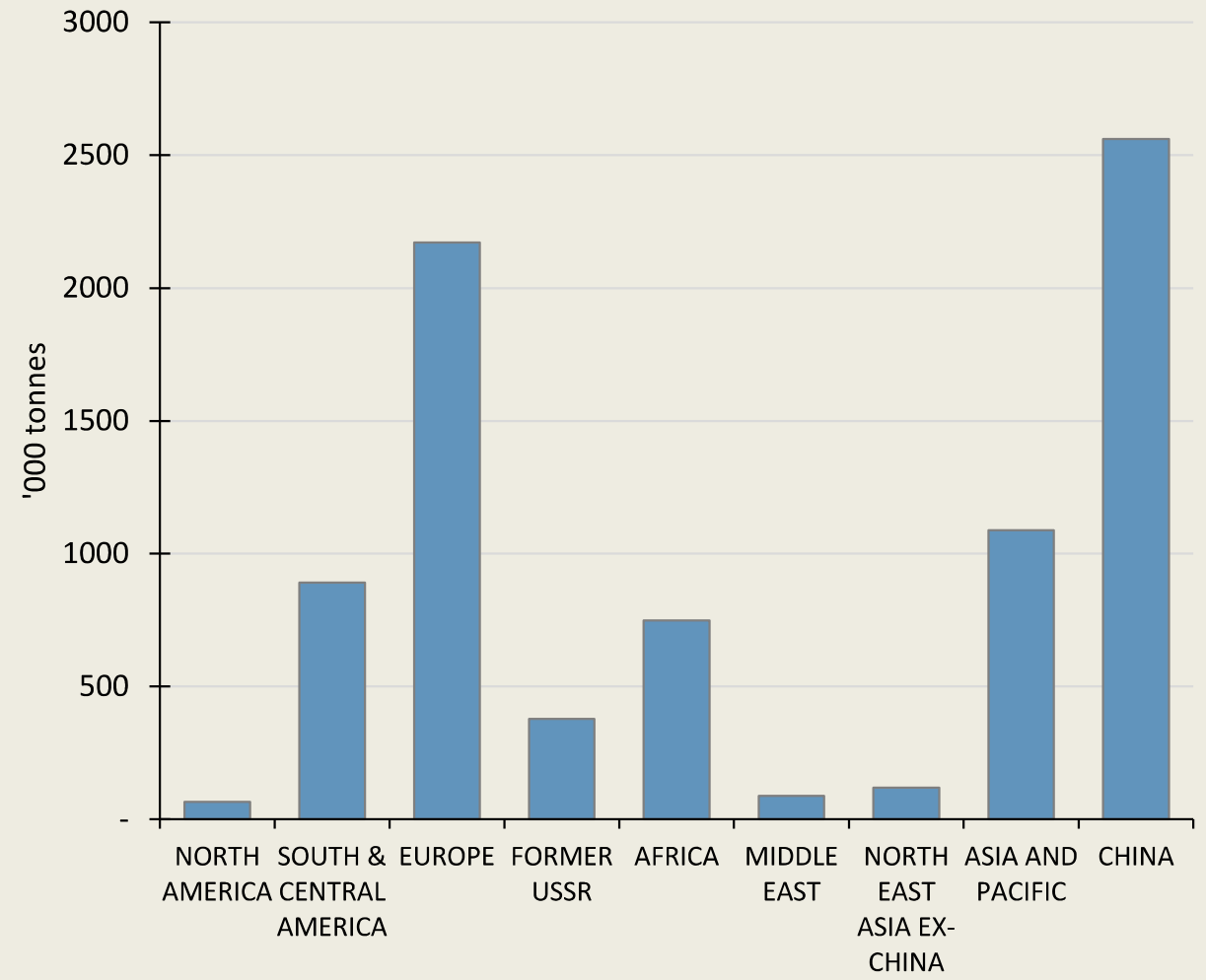
A need to return to demand-led business models

We shall now focus mainly on China: Here is why

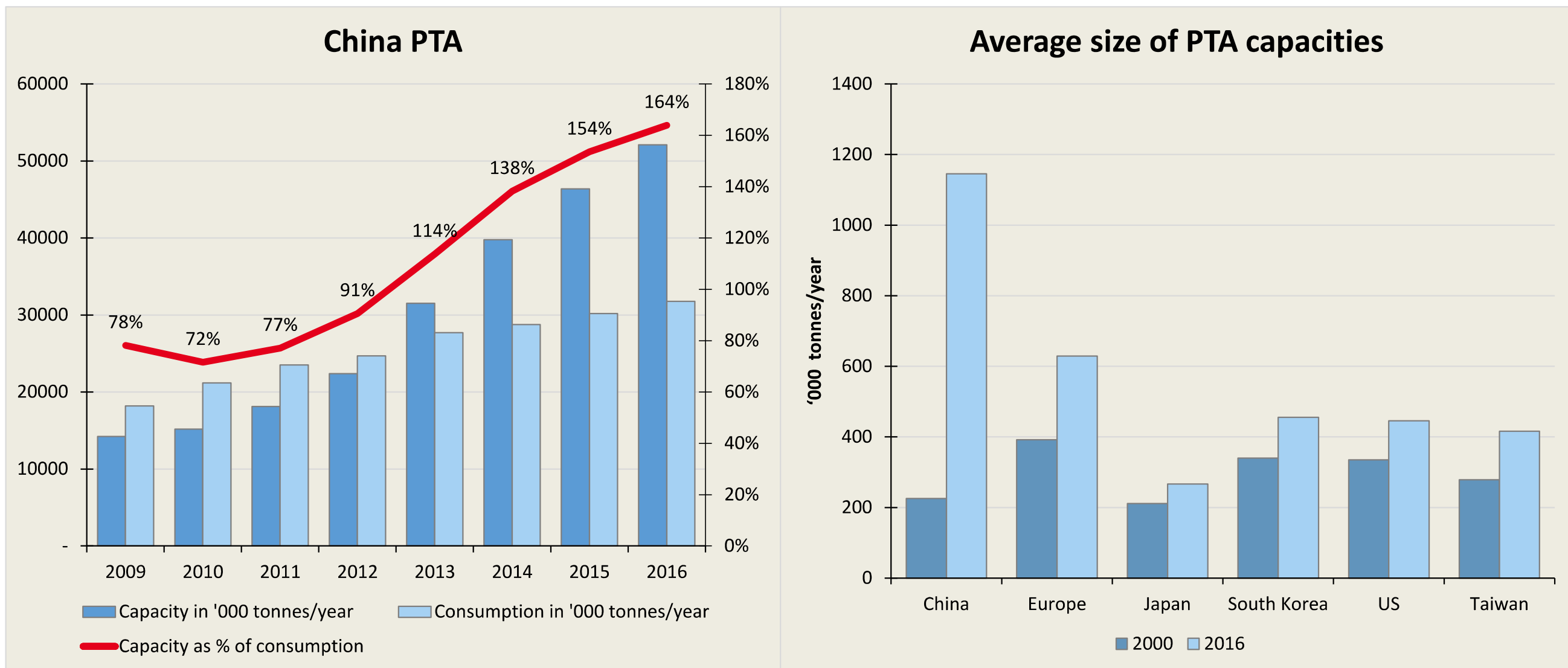
China versus India PP consumption



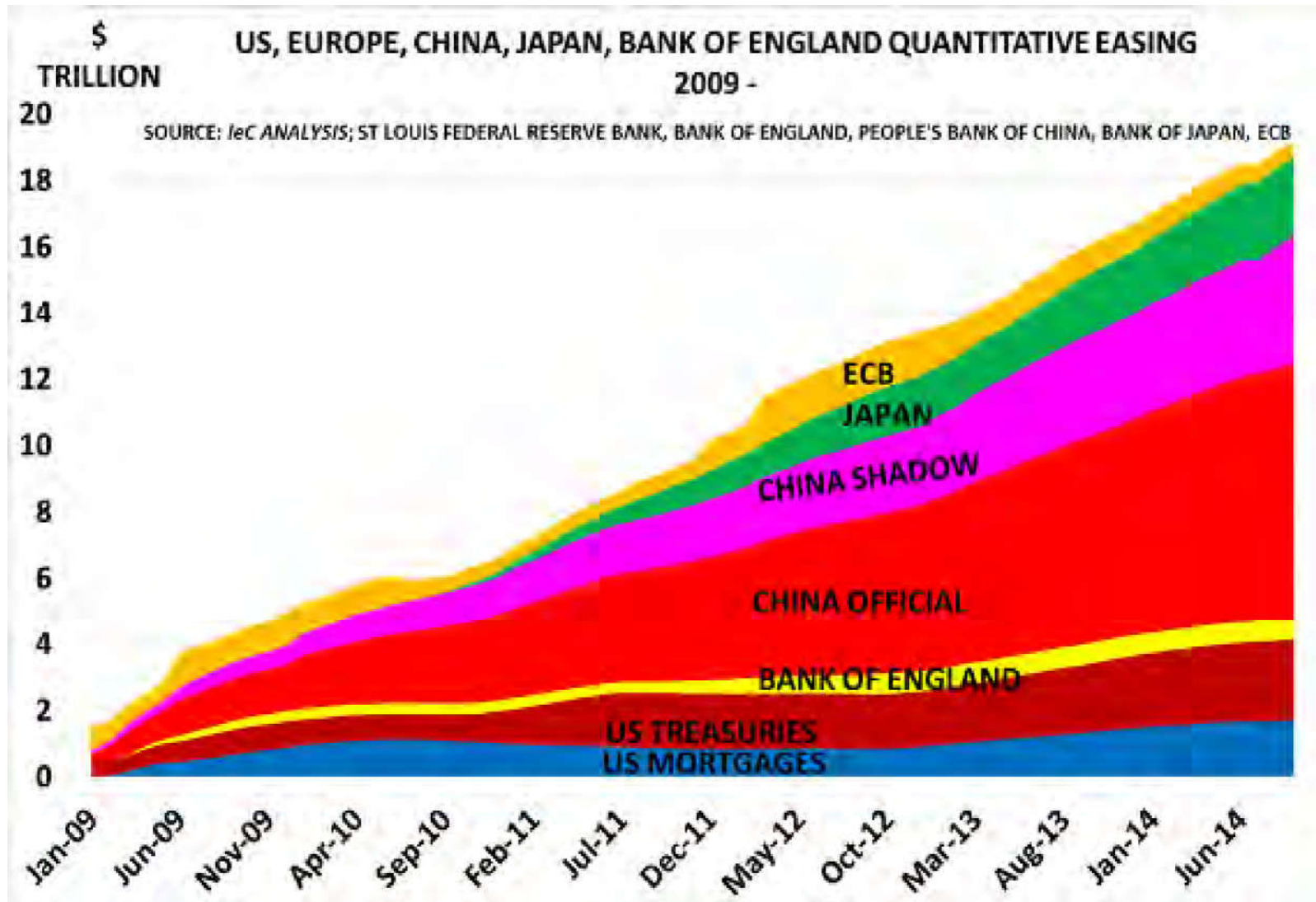
2015 LLDPE imports



The impact of stimulus on chemicals and polymers



The biggest credit bubble in economic history



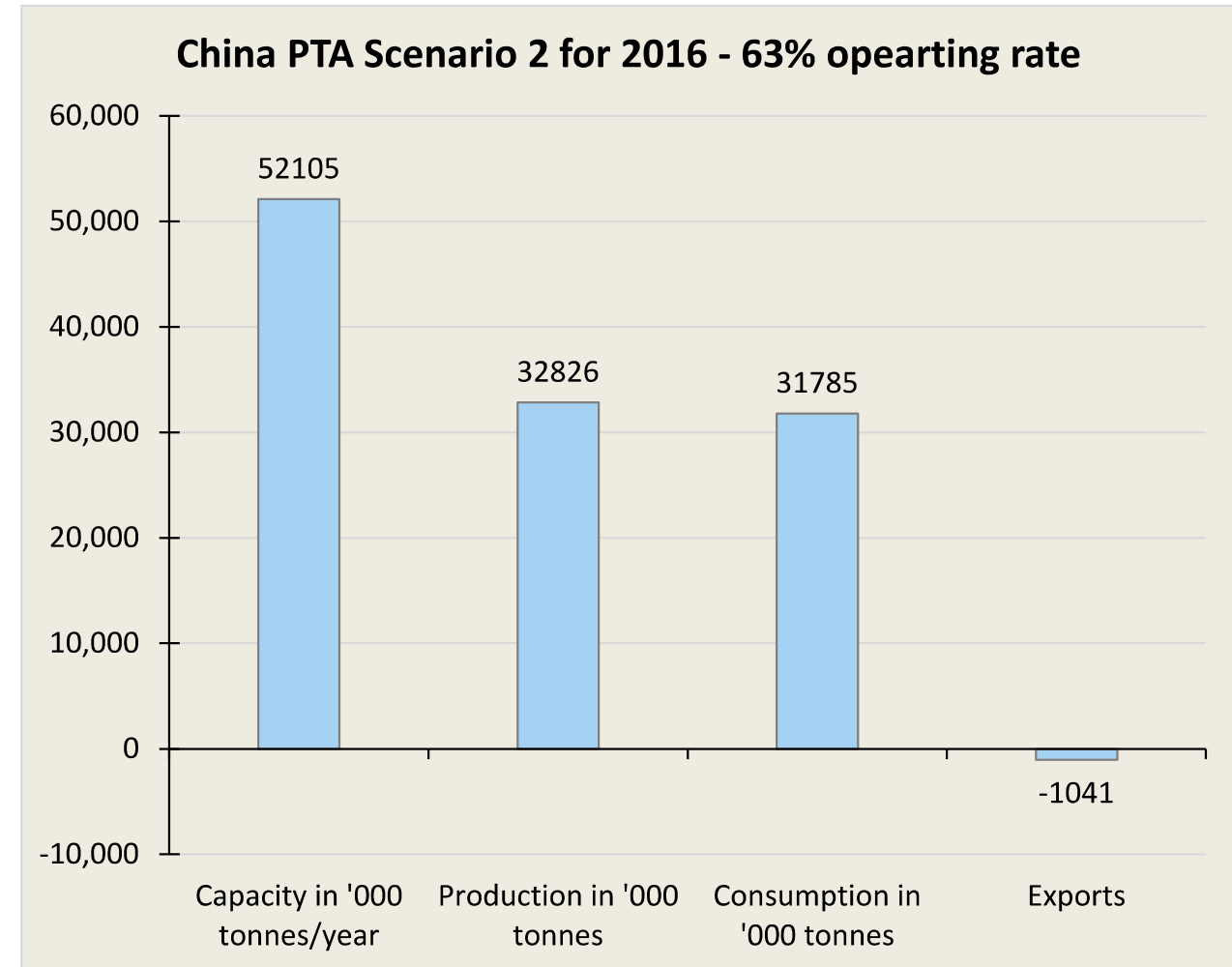
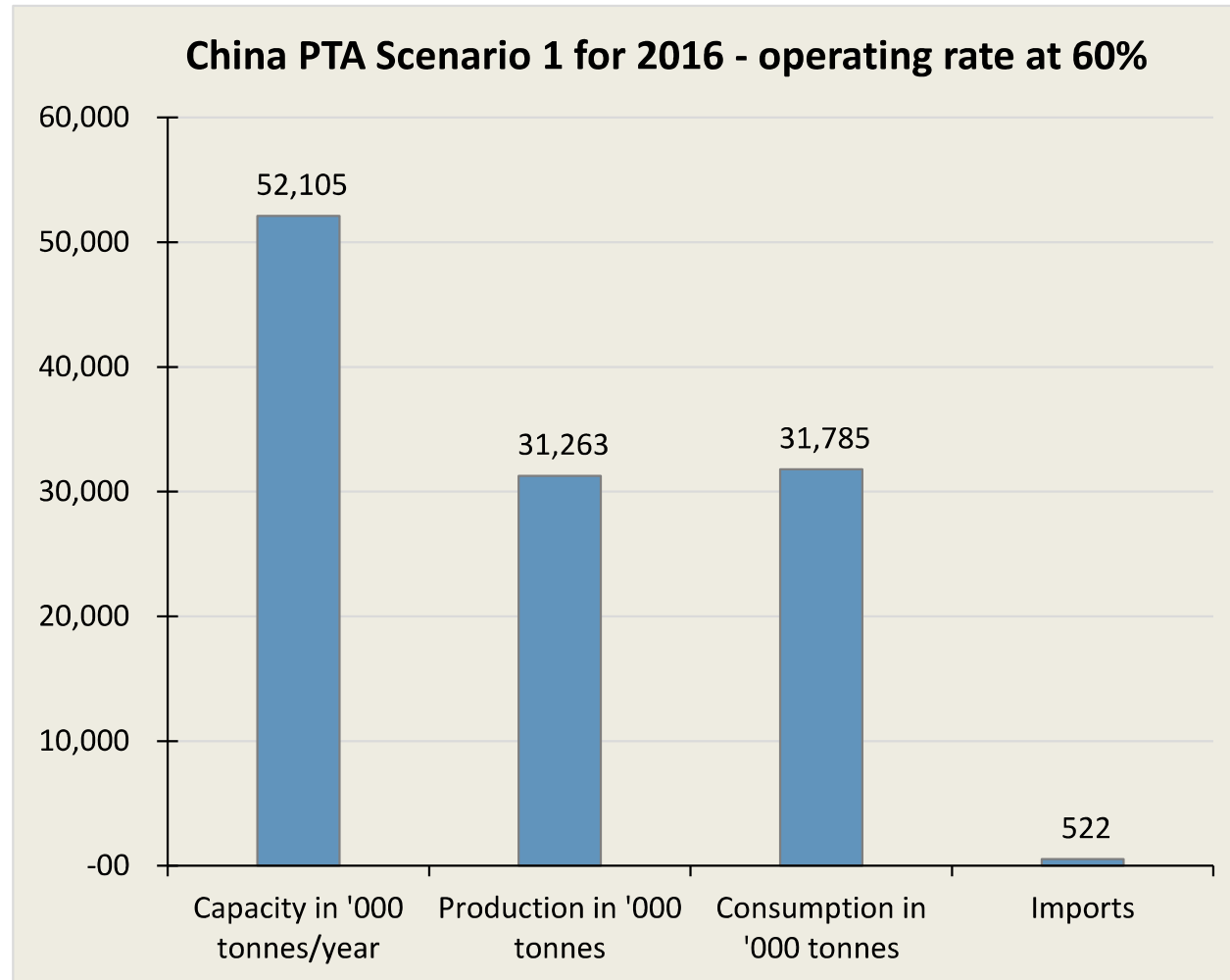
► President Xi Jinping, opening the 3rd Plenum, November 2013

“The good meat is all gone; all that is left are hard bones to chew”

► Premier Li Keiqiang in his Work Report to the National People’s Congress, March 2016

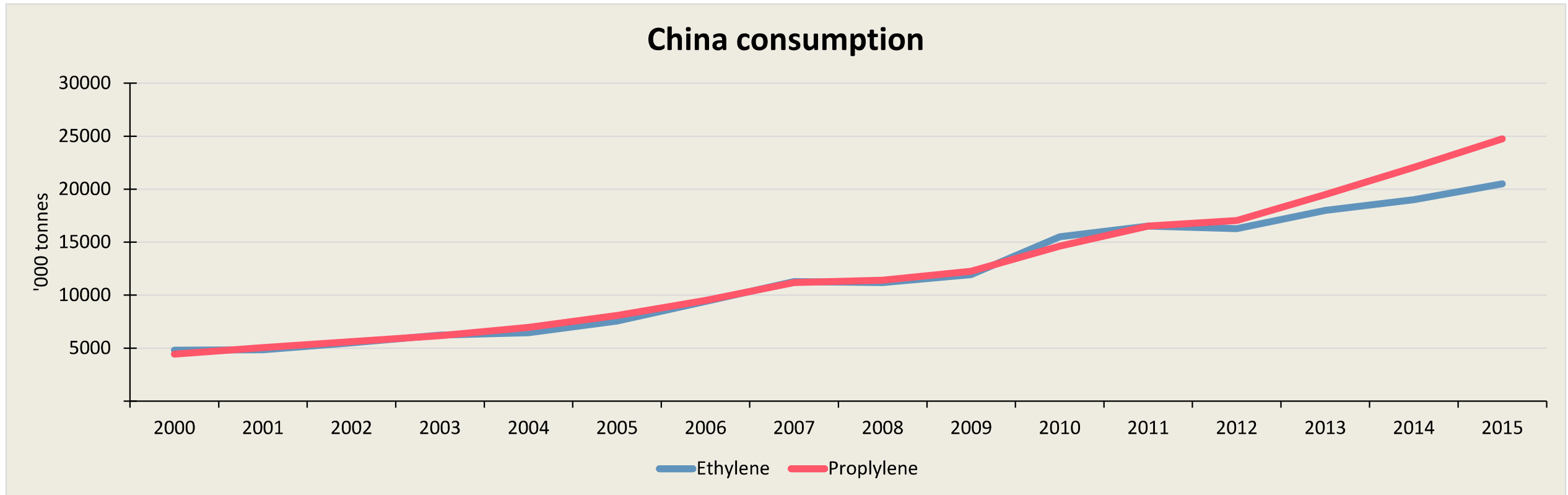
“This is the crucial period in which China currently finds itself, and during which we must build up powerful new drivers in order to accelerate the development of the new economy”

China moves into major potential export positions



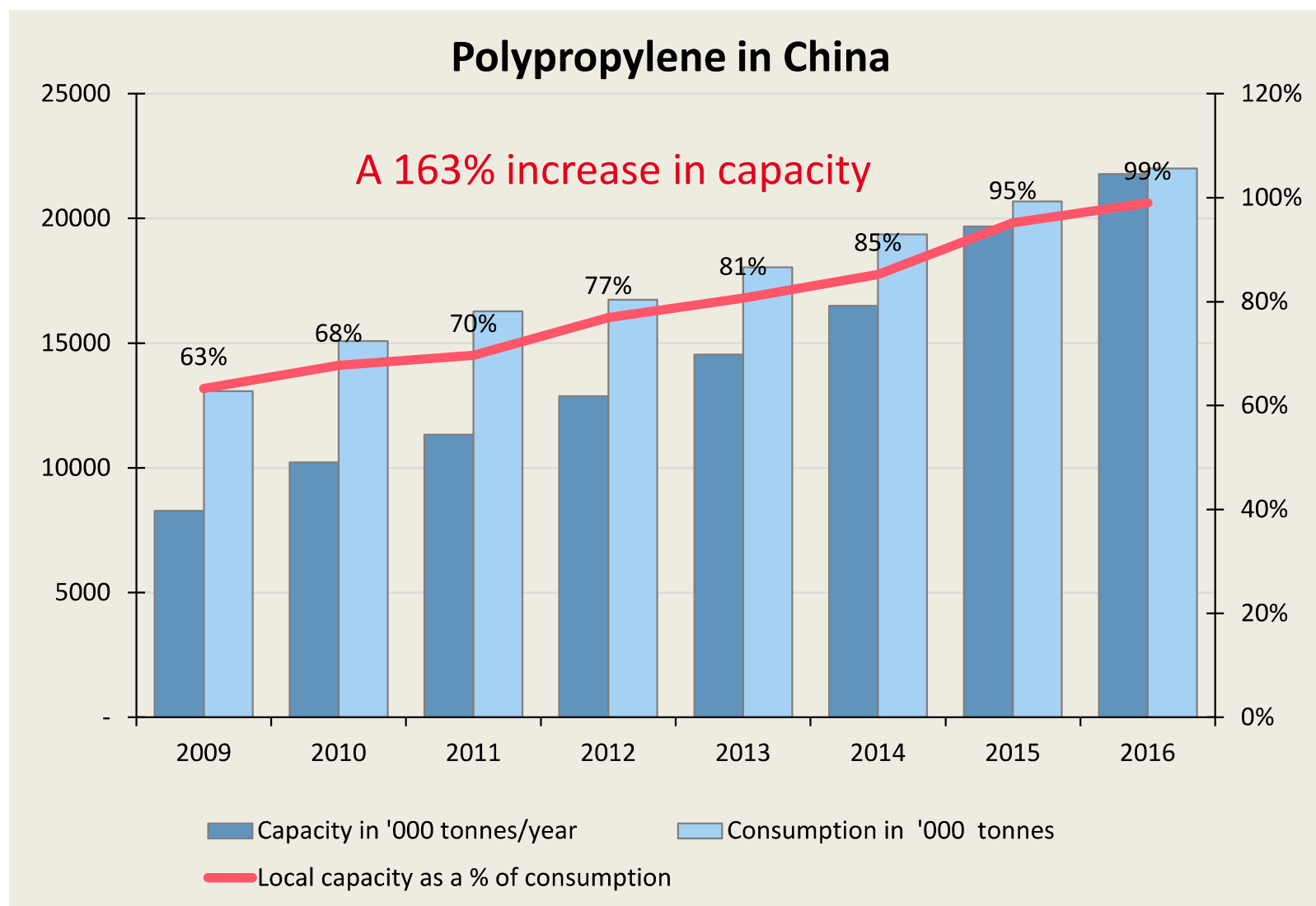
ICIS Consulting base case on the left. Both scenarios assume 5% demand growth

China becomes the first country or region in the world where propylene consumption exceeds ethylene



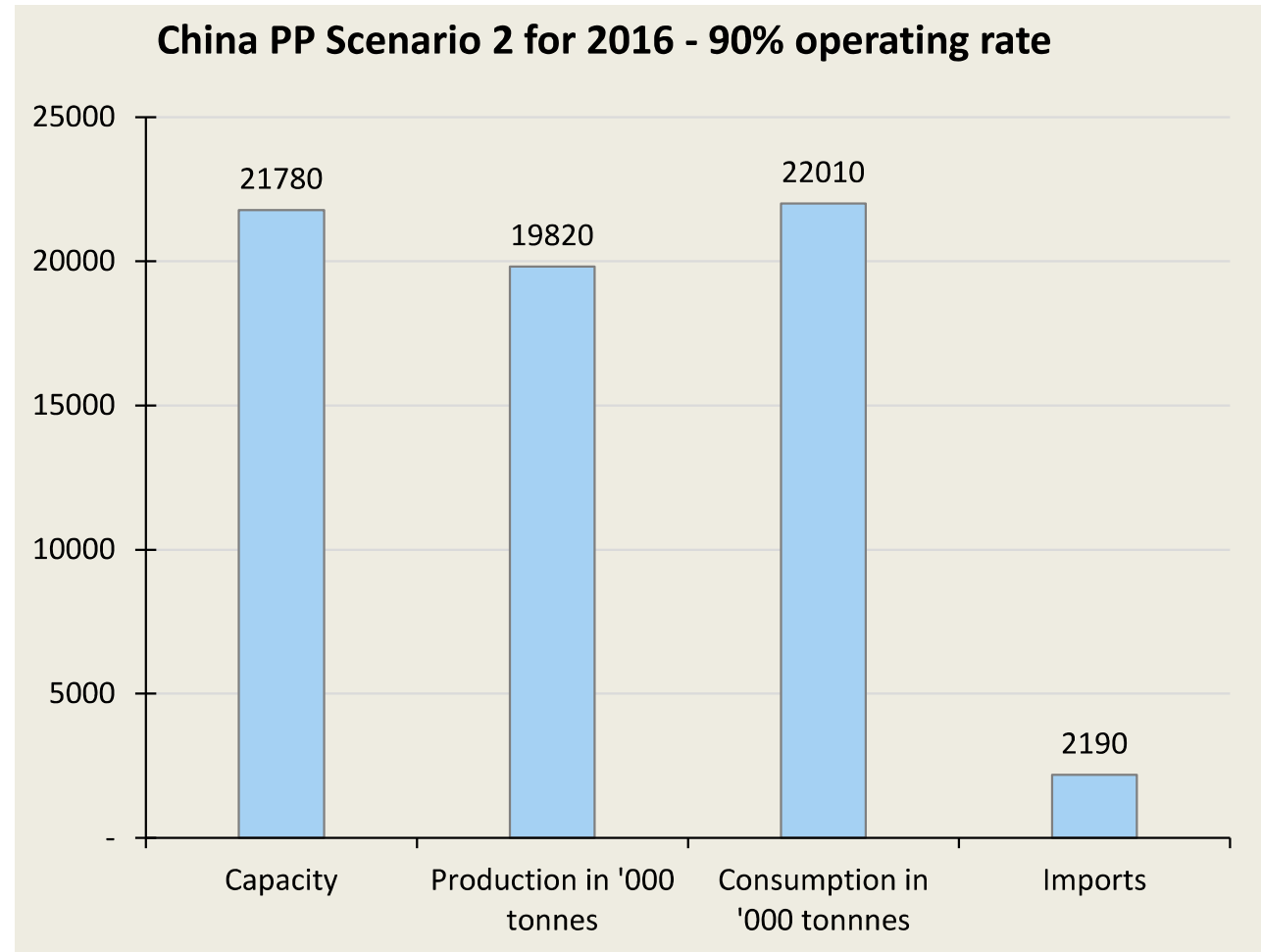
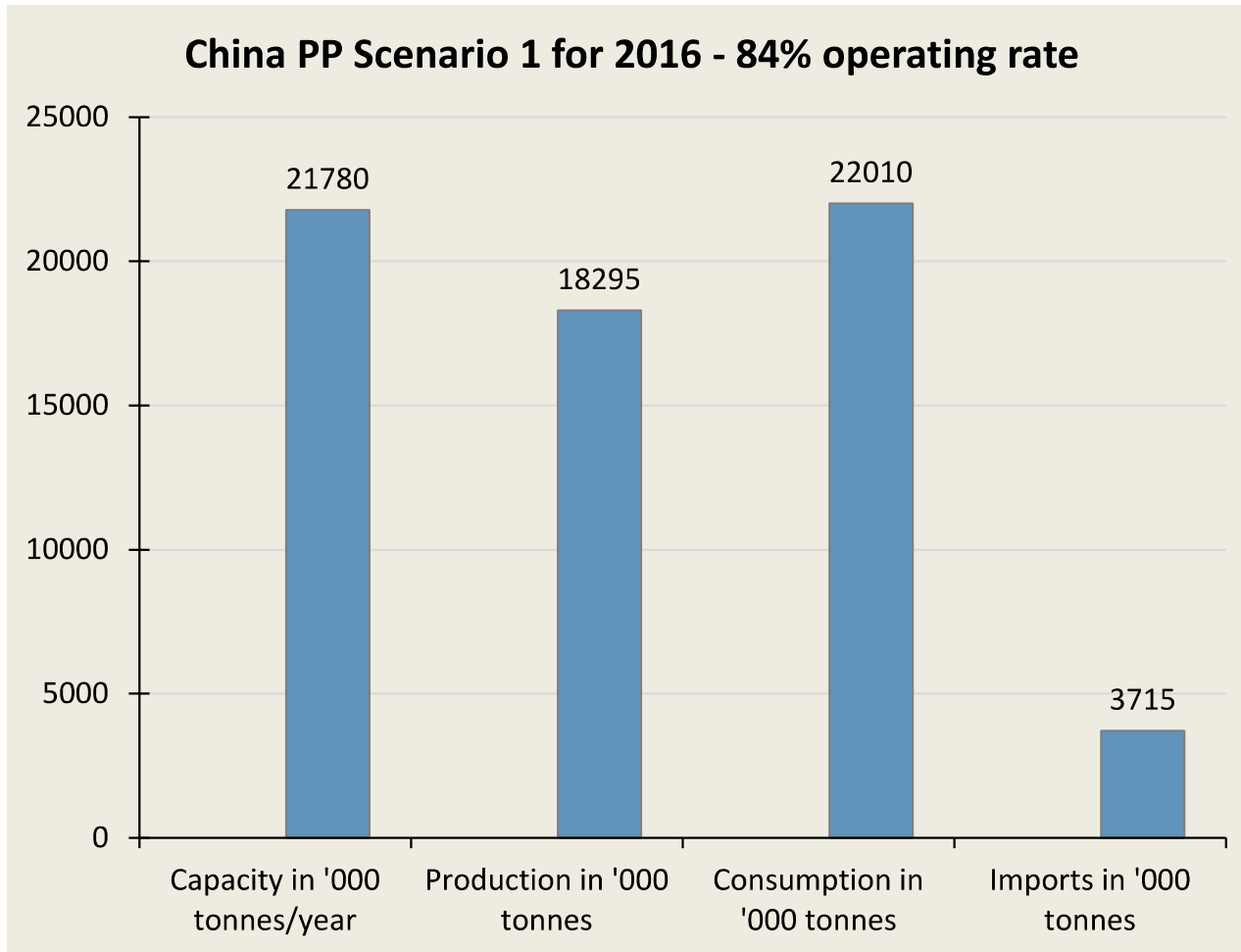
- ▶ China consumed 1.3m tonnes of phenol in 2010 versus capacity of 880,000 tonnes/year. In 2016, ICIS Consulting expects capacity of 2.7m tonnes/year versus 2.2m tonnes of demand.
- ▶ Acrylic acid capacity in China in 2010 was 1.1m tonnes/year versus consumption of 1m tonnes. In 2016, we are forecasting 3.6m tonnes/year of capacity versus 1.6m tonnes of demand

It wasn't about cost per tonne economics



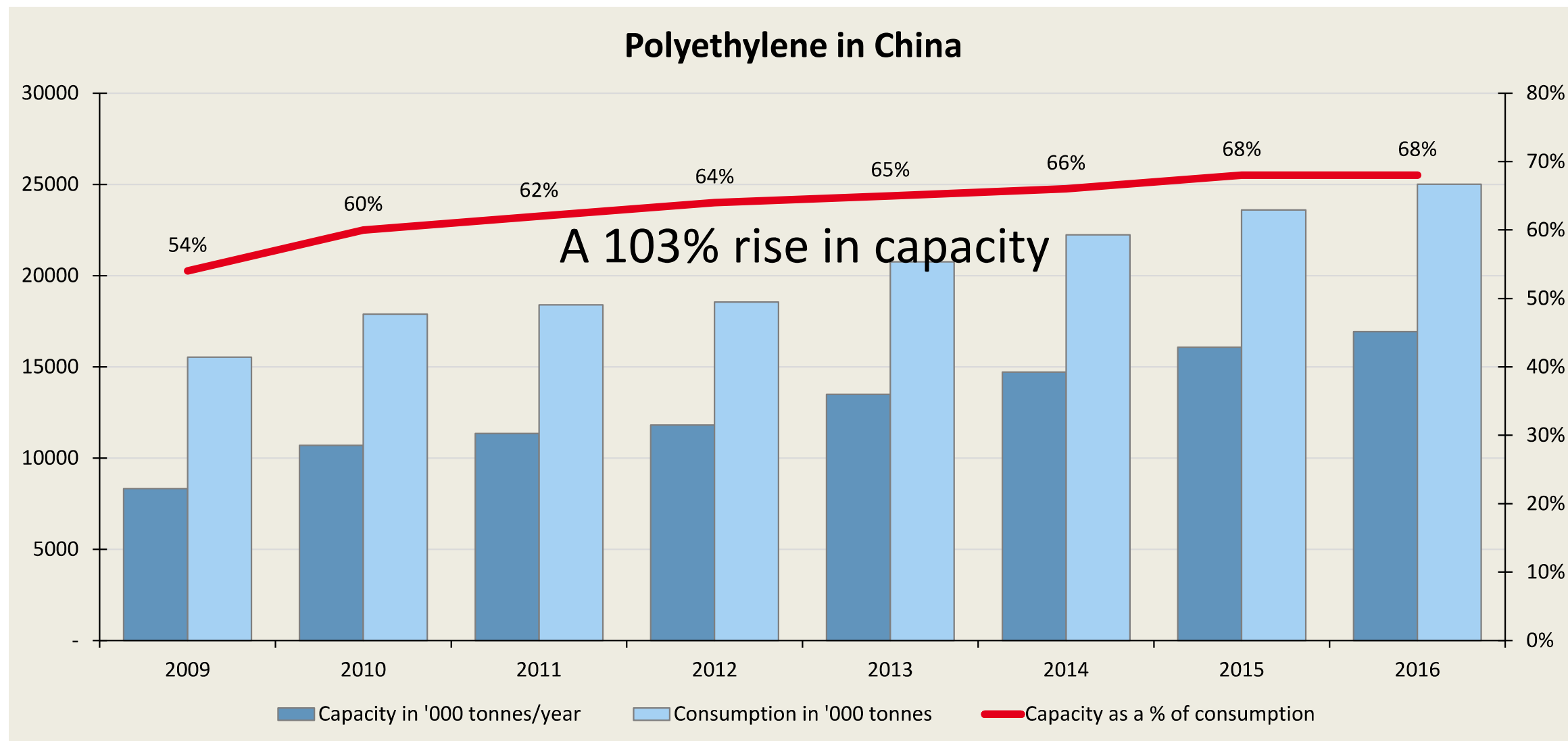
- ▶ It was about building factories for the sake of building factories to preserve jobs
- ▶ Little regard was given to conventional analysis of long term supply and demand

China moving closer to self sufficiency

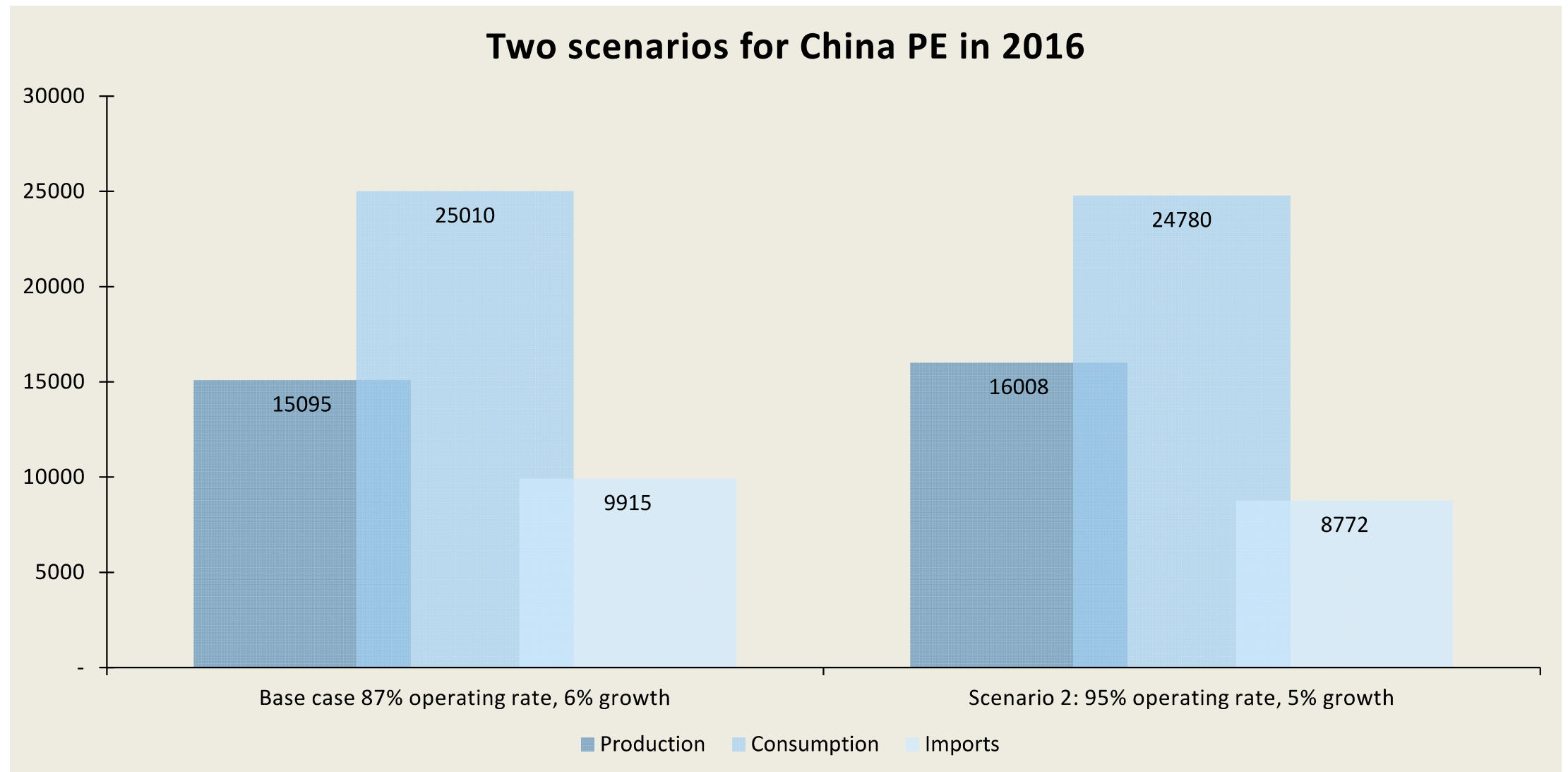


Both scenarios assume our “base case” demand growth of 6.5%

Opportunities remain strong, but for whom?



Running plants harder would provide much-needed tax revenues



[Demand: The New Direction for Profit](#)

Agenda

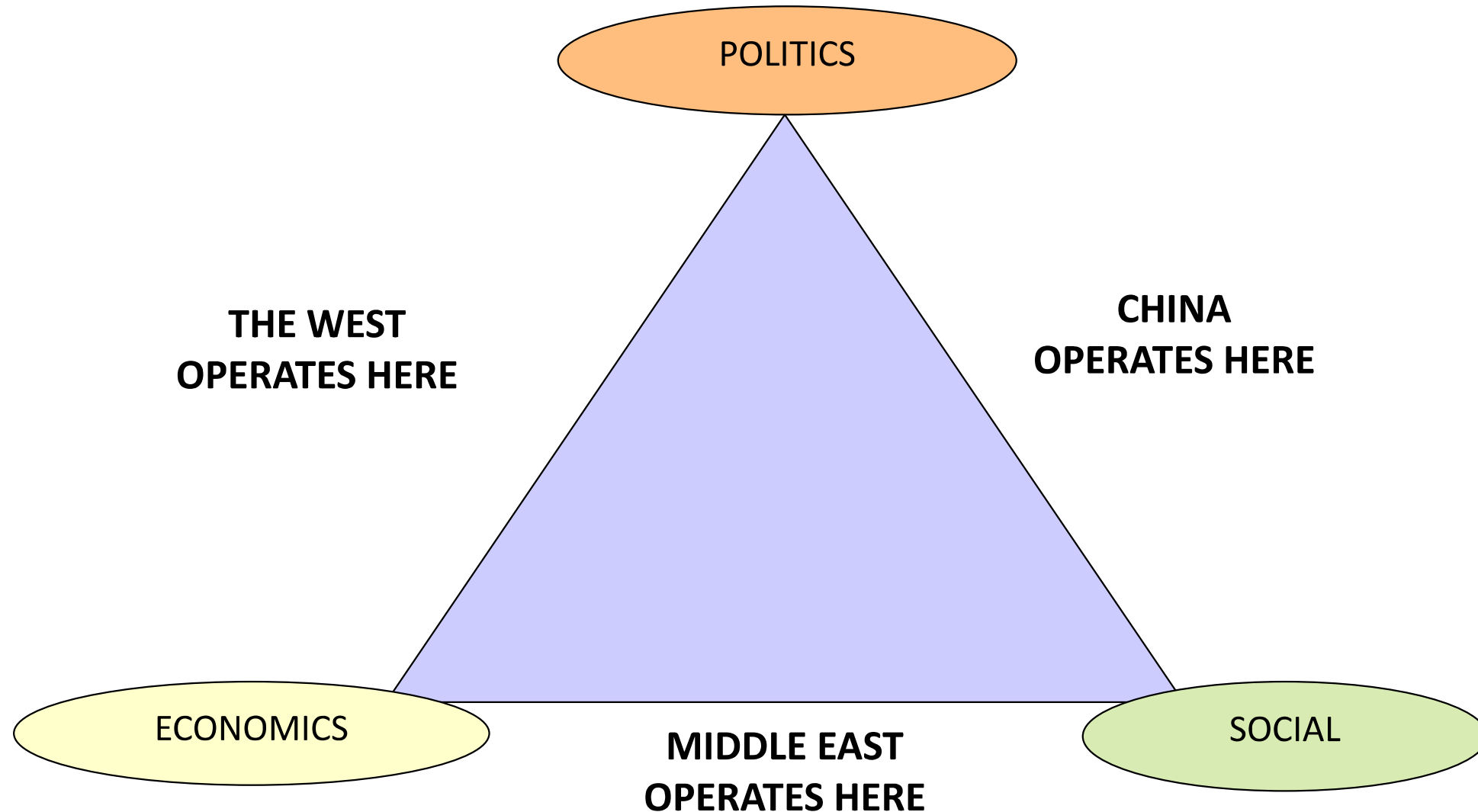
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A long-term outlook for China

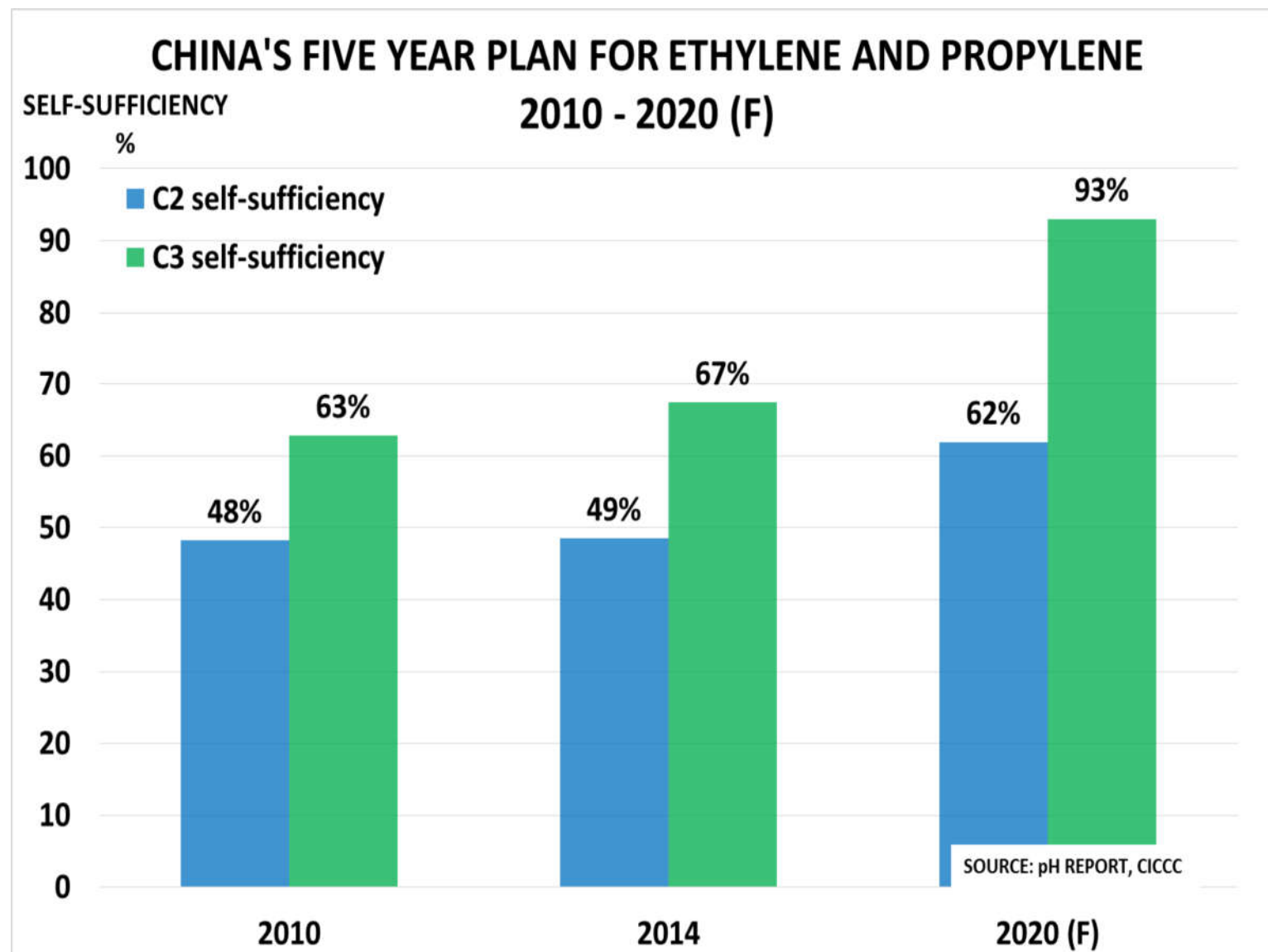
A need to return to demand-led business models

China still operates on Deng's principle – only rising living standards will keep the Communist Party in power



The importance of Five-Year-Plans

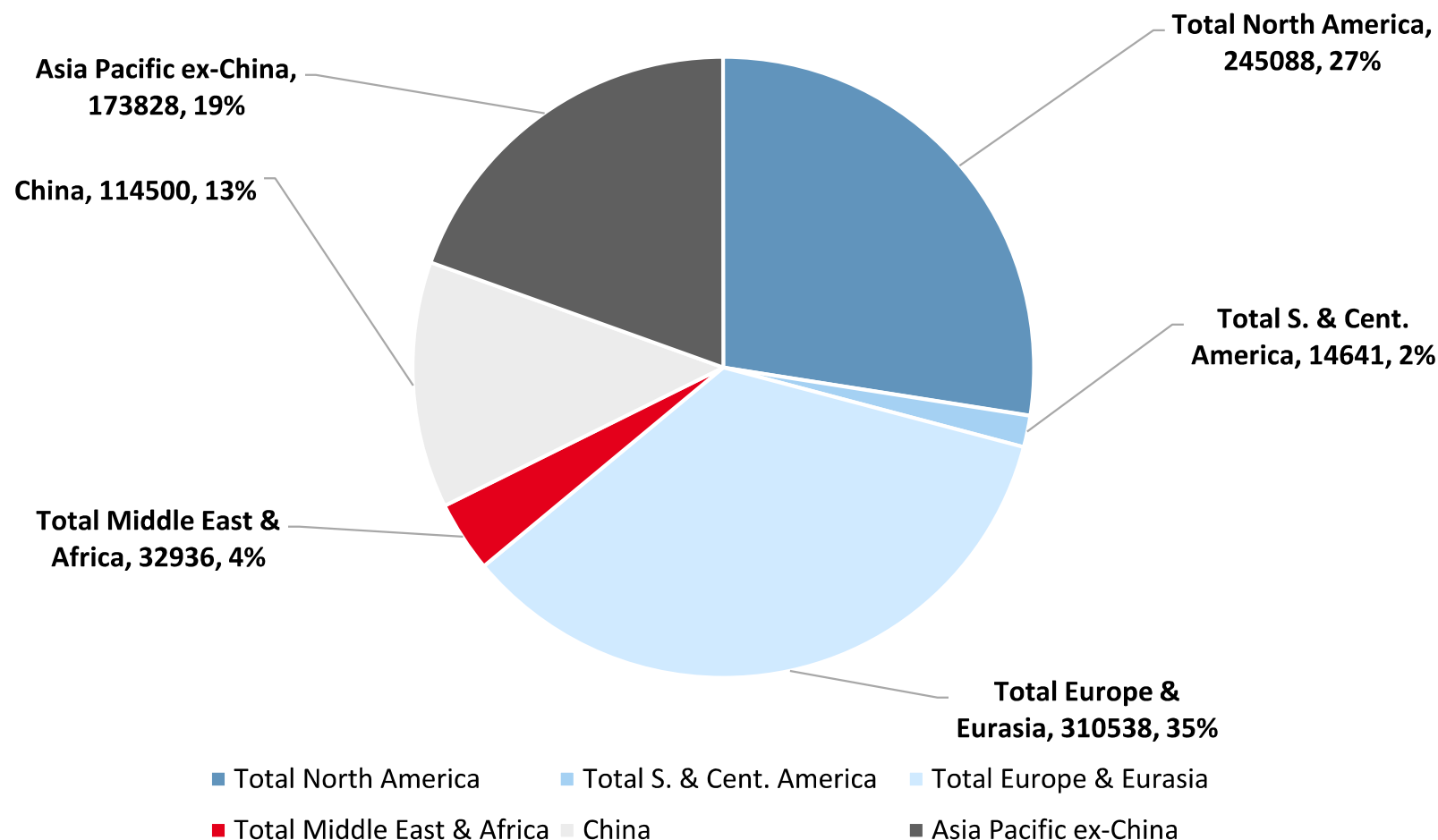
- ▶ In ethylene equivalent terms, net imports rose by 2m tonnes to 17.4m tonnes between 2010-2014, but are expected to rise by just 5% to 18.3m tonnes by 2020
- ▶ Under the 13th Five-Year-Plan (2016-2020), China's ethylene self-sufficiency rate would thus rise to 62% in 2020
- ▶ In propylene equivalent terms, net imports rose by 1m tonnes to 9m tonnes by 2014, but are expected to fall by 60% to just 3.6m by 2020. China's self-sufficiency rate would rise from 67% in 2014 to 93% in 2020



Coal: You need multiple scenarios

- ▶ CTO plants preserve jobs in the coal mining regions
- ▶ They maintain demand for coal, which is declining due to planned cutbacks in outdated steel production and a slowing economy
- ▶ They contribute to China's energy balance
- ▶ Big logistics improvements making freight between regions quicker and cheaper
- ▶ Upgrading six tonnes of coal, at around \$20/tonne, to a tonne of say raffia-grade PP - \$970-990/tonne on 29 April
- ▶ Big improvement in water efficiency

Proved coal reserves at end-2014 in million tonnes and % of global total

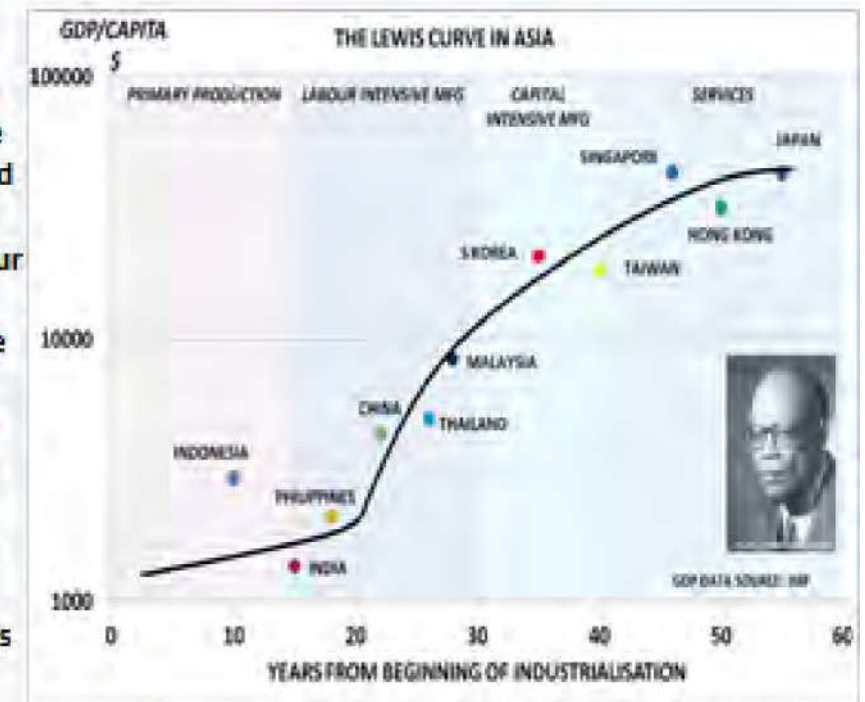


Demographics and the Lewis Curve

- ▶ The one child policy has resulted in a 4:2:1 family structure. One child may need to care for 2 parents and 4 grand parents
- ▶ China is ageing rapidly before it has reached developed economy status. The median age will hit 47.1 by 2030 compared to 39.9 in the US
- ▶ The working age population (aged 15-64 years) will shrink by 10.8% in 2014-2030. This is equivalent to 107 million fewer people

THE 'LEWIS CURVE' SHOWS CHINA AND INDIA HAVE MAJOR CHALLENGES AHEAD

- ❖ West Indian Sir Arthur Lewis analysed why some countries had successfully industrialised and others failed
- ❖ He discovered that they initially have a 15-20 year 'free ride', as people migrate to the factories from the rural areas, and GDP grows quickly
- ❖ Then the economy becomes more labour intensive, as wage rates rise due to a slowdown in the migration rate. People also have to become more skilled
- ❖ After ~30 years, the economy becomes more capital intensive, which demands an educated and creative workforce
- ❖ After ~40 years, the economy becomes more service-based, requiring a workforce with problem-solving abilities
- ❖ If governments don't allow these new skills to develop, the country's development process stalls



Lewis won the Nobel Prize for Economics in 1979

New Silk Road or “One Belt, One Road” initiative

New Silk Roads | China is assembling new trade routes, binding other regions closer to it



Escaping the “middle income trap” and more basic manufacturing

- ▶ A smartphone manufacturer in Guangdong makes all its components from scratch, including the electronic chemicals, higher-value polymers and the memory chips
- ▶ But it cannot afford to assemble the smartphones in Guangdong because of higher labour costs
- ▶ So the unassembled phones are shipped to Yunnan for final assembly, where labour costs are much lower
- ▶ The phones are wrapped in locally made polymers, via CTO plants, and shipped overseas –via the One Belt, One Road initiative and around China



China's economic growth: Growing complexity and uncertainty

- ▶ Huge potential for internet sales boom, and thus growth in polymers, because:
 1. Many second and third-tier cities lack enough conventional retailing to serve needs
 2. Excellent connectivity
 3. Outstanding road and rail links
 4. Items bought online are around 50% cheaper in China than traditional retailing, compared with 10% in the US



The Ctrip HQ, opposite our offices in Shanghai. The company has 30,000 employees

Growing complexity and uncertainty



Jack Ma of Alibaba

- ▶ One of China's biggest challenges is raising enough taxes to pay for its ageing population and its environmental clean-up:
 1. Will the taxes from internet sales be enough to replace lost revenues from factory closures, and smaller conventional retail sector?
 2. "Cash on delivery" very common, and so online companies avoid taxation entirely

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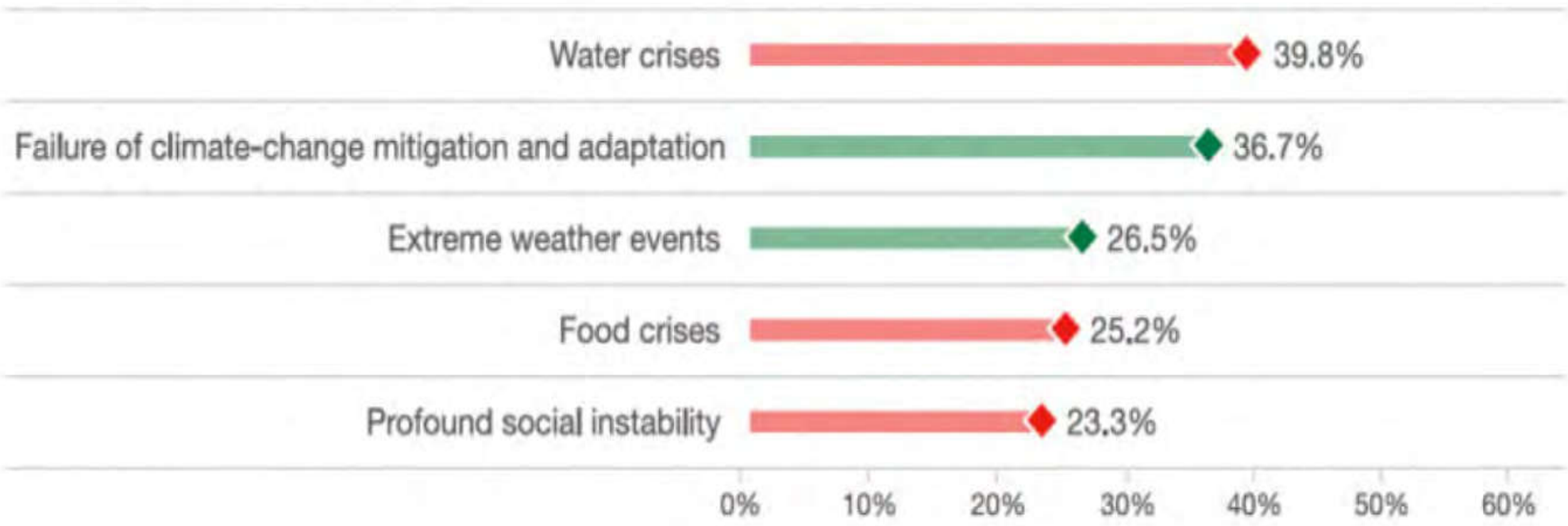
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The global opportunity: Create your own demand

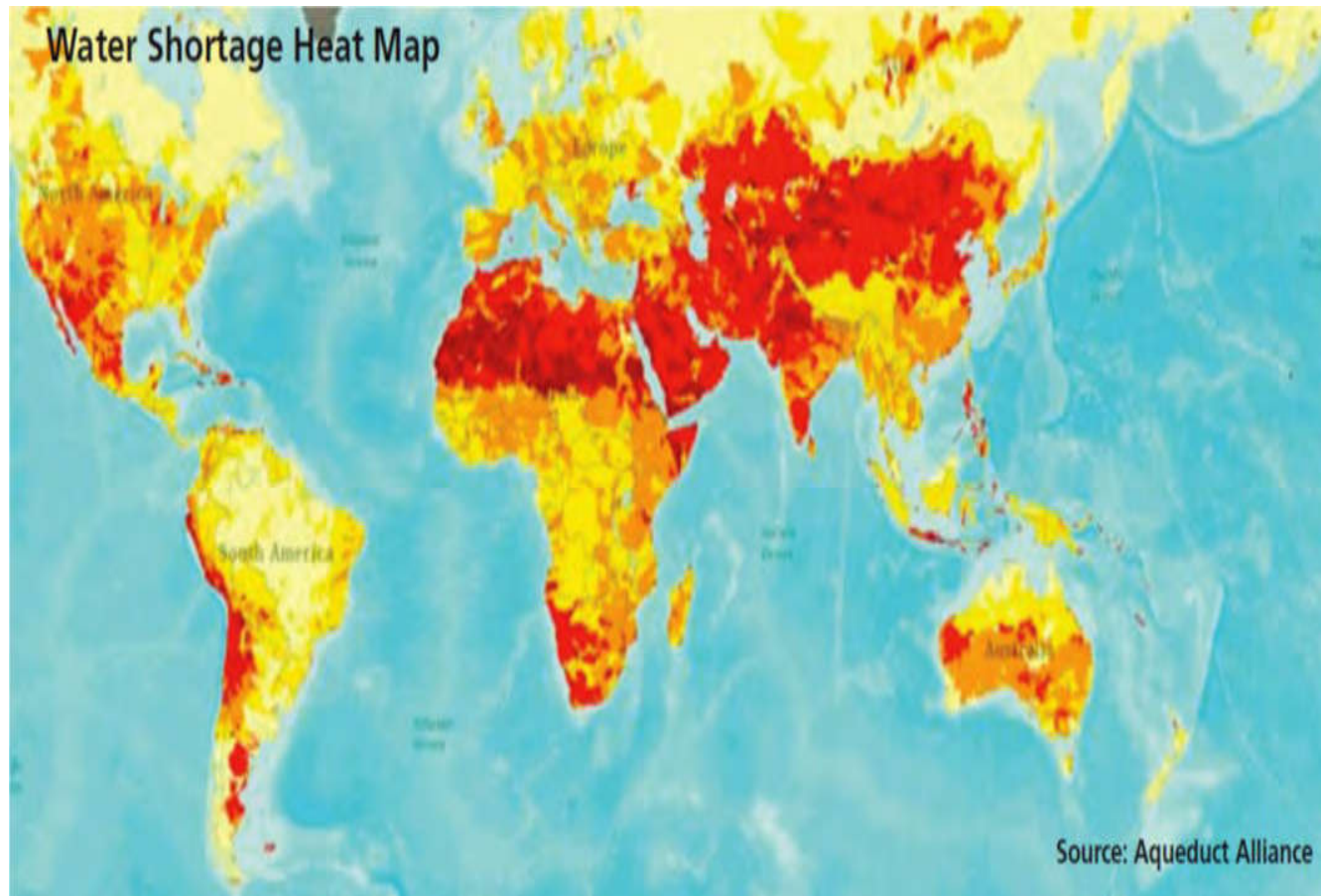
The Global Risks of Highest Concern, 2016

For the next 10 years



Source: World Economic Forum

Water shortages: The challenges and opportunities



- ▶ Globally, 20-30% of drinking water is lost because of leakages in urban distribution systems – Huge opportunity for plastic pipes
- ▶ Almost 60% of the world's fresh water goes to crop irrigation, with many countries charging nothing for its use – Drip irrigation systems – i.e. “plastic veins” – that direct water to the roots of each plant

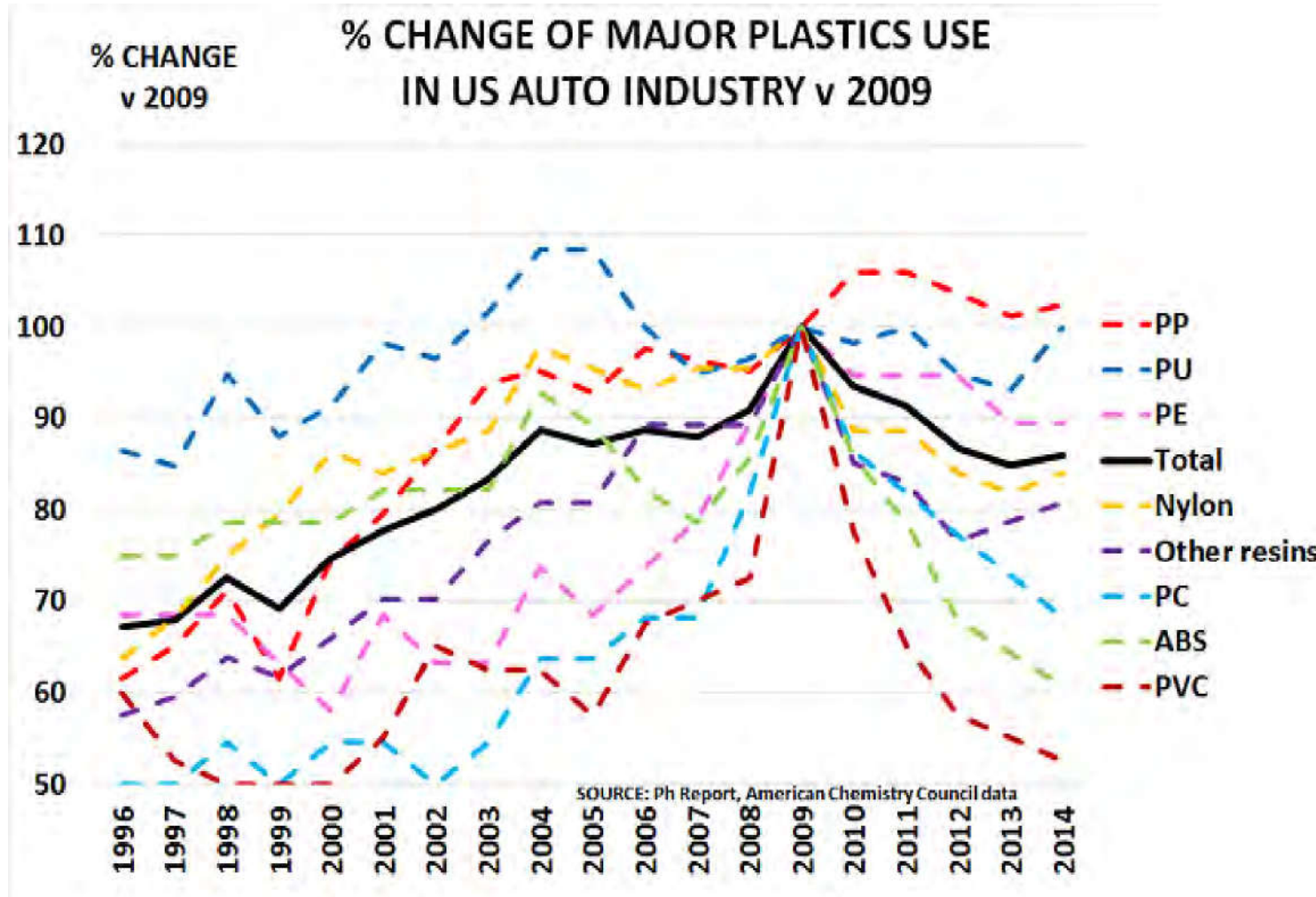
Aqueduct Alliance members include Dow Chemical, DuPont and Shell

Plastic shrink wrapping extends the life of a cucumber from 3 to 14 days



Dow Chemical

“Build it and they will come” just doesn’t work anymore!



- ▶ The percentage of high and medium strength steel used in US autos rose from 13.3% in 2009 to 16.2% in 2014; iron rose from 5.2% to 6.8%, aluminium rose from 8.2% to 10%; and glass recovered to 2.4%
- ▶ Meanwhile, of the polymers, only PP has seen volume gains; polyurethane has held 2009 levels – and all the rest have lost volume

[Demand: The New Direction for Profit](#)

In autos, you must therefore, for example:

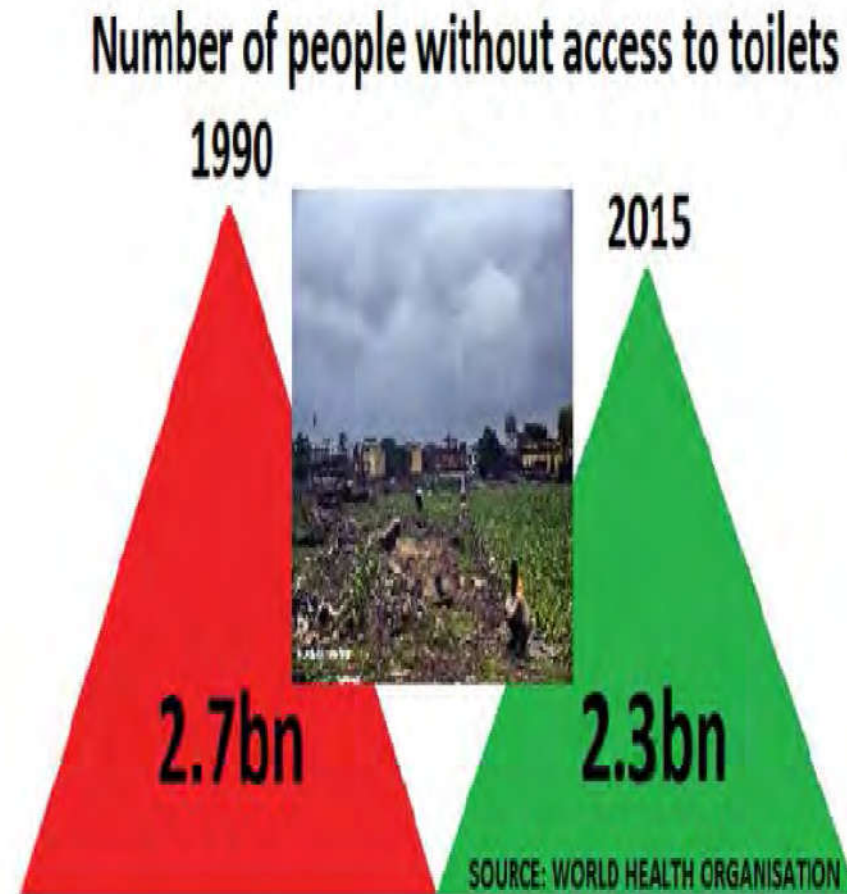
- ▶ Work with the auto makers, who will want ever-cheaper materials, to design with them models that beat non-organics on cost and performance
- ▶ Opportunities in 3D printing as a means of keeping old cars on the road
- ▶ Autonomous driving might result in less autos sales volumes. So, again, you have to work closely with the auto companies



Separating the Winners from the Losers

Winners in this transition will believe that:

- ▶ Business models will return to being demand-driven, based on application development
- ▶ Companies need to realign their offerings with key demographic drivers e.g. the ageing Baby Boomers and greater domestic consumption in emerging economies
- ▶ Profitable growth will come from providing sustainable solutions that meet real needs (not just “wants”) in these new markets



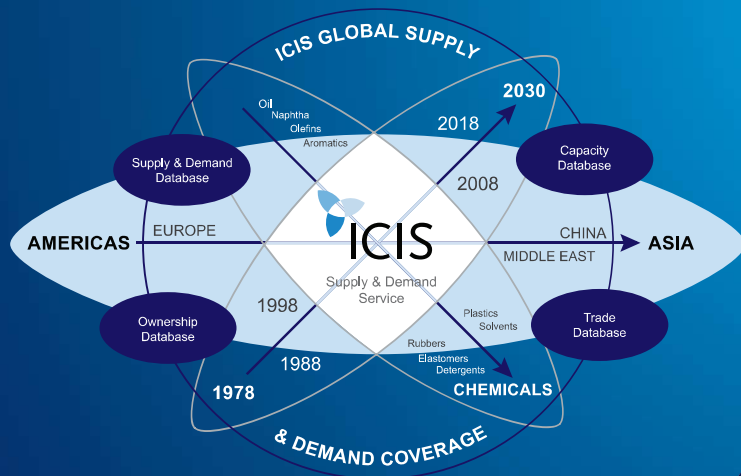
Losers in this transition will be those who think that:

- ▶ Stimulus programmes will return markets to the supply-driven model of the Supercycle
- ▶ China’s demand will be the saviour of the global industry
- ▶ The rise in oil prices meant end-user demand was robust
- ▶ Companies now ‘caught in the middle’, neither low-cost or selling a solution, will somehow regain pricing power



ICIS Supply and Demand Database

Single searchable source of historical data on global petrochemical and energy markets



- ✓ Historical and forecast data (1978-2030)
- ✓ Over 100 petrochemical products
- ✓ Over 12,000 refinery units
- ✓ Over 18,500 petrochemical plants
- ✓ Import, export and consumption volumes
- ✓ Plant capacity, production and operating status
- ✓ Upcoming plants, including speculative and announced projects
- ✓ Data breakdown by country, region, product or product family
- ✓ GDP, population, and consumer price index by country

More than just data, the **ICIS Supply and Demand Database** is a powerful analytics tool which gives end-to-end perspectives across the global petrochemical supply chain, including refineries. Data is derived by ICIS's team of Consultants using a 'bottom-up' approach – reconciling demand with supply, production, local capacity and net trade. Forecasts are validated against economic indicators such as GDP and per capita consumption.