THE CHEMICAL INDUSTRY IN TRANSFORMATION:
A NEW JOURNEY BEGINS
Agenda for today

• Five new forces acting on the Chemical Industry
• Demographics and Populist Politics
• Sustainability replaces Globalism as the major dynamic
• The impact of the Five forces on China
• Impact for Middle East players
Sustainability is replacing globalization as the driver of the world economy

• Demographics have moved from a tailwind to a headwind

• In response Western politics has moved towards populism

• This creates pressures for local stimulus & job creation

• As oil growth slows, petrochemicals used to secure outlet for crude

• At the same time environmental and other pressures mount

• These forces will profoundly reshape all industries, including ours
Five pressures are changing the chemicals world

- More global feedstock opportunities
- But petchems markets to become more regional/sub-regional
- Backlash in West over long supply chains for jobs, political and environmental reasons
- Shorter supply chains will drive greater customisation to meet consumer needs
“We shall pay any price, bear any burden, meet any hardship, support any friend, oppose any foe to assure the survival and success of liberty.”
Our core argument rests on demographics and the retirement of the Babyboomers. This explains why Western economies are experiencing GDP growth below long-term trends. And helps to explain the shift to “less is more”...
MOST PEOPLE IN THE WORLD’S WEALTHIEST COUNTRIES FEEL THEIR COUNTRY IS HEADING IN THE WRONG DIRECTION

WRONG DIRECTION   RIGHT DIRECTION

Base: Representative sample of 18,557 adults aged 16-64 in 26 participating countries, June 23rd - July 7th 2017.
Five pressures are changing the chemicals world

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“We assembled here today are issuing a new decree to be heard in every city in every foreign capital and in every hall of power. From this day forward, a new vision will govern our land. From this day forward, it’s going to be only America first, America first. Every decision on trade, on taxes, on immigration, on foreign affairs will be made to benefit American workers and American families.”
Five Forces re-shaping our industry

- Over Building
- Local Reasons & Jobs
- Sustain-ability
- Consumer Needs
- Peak Oil
Pressure 1: Current overbuilding will depress margins and cut trade
Pressure 2: Future over-building: Petrochemicals seen as route to growth
Pressure 2: Future overbuilding: China returns to cracking

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Pressure 3: Peak oil will force oil companies to look to petrochemicals for growth
Pressure 4: Recycling MUST be solved and will lead to a local-for-local revolution

Global Flows of Plastic Packaging Materials in 2013

78 MILLION TONNES
(ANNUAL PRODUCTION)

98% VIRGIN FEEDSTOCK

8% CASCADED RECYCLING

4% PROCESS LOSSES

2% CLOSED-LOOP RECYCLING

14% COLLECTED FOR RECYCLING

14% INCINERATION AND/OR ENERGY RECOVERY

32% LEAKAGE

40% LANDFILLED

Plastic bags

1 Closed-loop recycling: Recycling of plastics into the same or similar-quality application

2 Cascaded recycling: Recycling of plastics into other, lower-value applications

Source: Project Mainstream analysis – for details please refer to the extended version of the report available on the website of the Ellen MacArthur Foundation: www.ellenmacarthurfoundation.org

Kenya brings in world’s toughest plastic bag ban: four years jail or $40,000 fine

Producing, selling and using plastic bags becomes illegal as officials say they want to target manufacturers and sellers first
Pressure 5: Targeting the “average” consumer no longer works
Pressure 5: Solutions need to be targeted which means innovation close to the consumer

- The demographic tail-wind means that selling “average material” no longer works
- Products and services need to be targeted
- Innovation needs to happen close to the customer
- Long supply chains won’t work
What we will discuss on China

• How our five challenges and opportunities apply to China as it tries to build new growth model
• Our over-reliance on China
• What if China fails?

19th National Party Congress
China’s economy: Building a new growth model
Over Building
Closing down overcapacity, dealing with bad debts

Local Reasons & Jobs
Closing east/west wealth gap

Energy Deficit/Peak Oil
China needs to find oil, ME needs to place oil

Consumer Needs
Escaping the middle-income trap

Sustainability
Cleaning up the environment – e.g. scrapping local GDP targets
Building factories for sake of building factories

- Steel, aluminium, chemicals built for economic multiplier effect
- Tied-in to local government revenues
- Congress stressed need to get rid of “zombie companies” that borrow more money to pay existing debts
- These factories also bad for environment

China's PVC market

Average size 115,000 tonnes/year; 80% based on coal

ICIS Supply & Demand Database
Measuring the rise and fall of lending....

- China increased lending by $10 trillion in 2009 when its nominal GDP was only $5 trillion.
- Growth in lending slowed in 2014, Lending was down by $4 trillion by 2015
- Last year, China once again took the controls off its financial system, resulting in a renewed surge in credit growth
- Another credit slowdown is already taking place now Congress is over
We will leave no-one behind in the march towards common prosperity – Xi Jinping, 19th Party Congress

- In booming eastern and southern provinces, incomes soar as does consumer spending
- But in north and west, lack of enough basic manufacturing jobs
A difficult balance: Jobs versus sustainability

- China’s rustbelt losing rather than gaining jobs as coalmines, steel mills shut down
- But:
  - 1.6m people die every year from air pollution*
  - It would take $1,000 trillion to clean up China’s soil pollution**
- Middle classes want to leave China
- Cleaning up environment key objective of the Congress

*Berkeley Earth Institute; **The Economist
Immediate implications for chemicals

- Major programme of inspections for air pollution has led to some 40% of factories being shut this year:
  - Tighter chemicals supply in some value chains
  - Longer supply where customer closures are greater

- Chemicals plants also being relocated (see right):
  - Tighter supply again
  - Boost to E&P, importers etc.
Major state-funded innovation drive

• The population of Chinese aged between 15 and 64 peaked in 2013
• Ratio of children and elderly to working-age Chinese — the dependency ratio — began rising in 2011
• Huge government funding of higher-value industries
The solution: One Belt, One Road!

- One Belt – road and rail links to raise income levels of poorer China
- One road – better maritime links between rich China and rest of OBOR
- Plays on demographics (see map)

Written into constitution during Congress
OBOR self-sufficiency threatens traditional exporters

- Across all the value chains, majority of consumption and capacity inside OBOR
- Huge opportunities – e.g.
  1. Oil, gas to China from the Middle East
  2. China invests in new capacity in Middle East
  3. And/or Middle East invests in China, with feedstocks from this region

ICIS Supply & Demand Database
## China’s new wave of steam crackers

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### Energy Deficit/Peak Oil:
- China gets cheap oil from the ME-
- M-E gets to place oil
- China takes advantage of oversupplied natural gas

### Consumer needs: higher-value manufacturing
Petronas/Aramco: Peak Oil Demand And Local Jobs

Four steps to success:

1. Aramco will supply 70% of crude
2. Captive oil will make whole project more competitive
3. Will boost Malaysian economy
4. Malaysia and Saudi Arabia in OBOR, so guaranteed polyolefins customer could be China
Our over-reliance on China
Most global stimulus has been provided by China
Post Global Financial Crisis

2007-2017:
Focus has switched to domestic-led GDP growth from exports.
China will account for 55% of global PE consumption growth - up from 31% in 2000-2007
Similar story across all other major value chains

Global PP consumption growth 2007-2017

Global polyester fibre consumption growth 2007-2017
So, what if reforms go wrong?
Three scenarios for 2018-2025

**Scenario 1 – Success**
(our base case)
China easily deals with its debt problems. Growth in new economy makes up for shutdowns of oversupplied industrial capacity
Environmental degradation brought under control
China escapes middle-income trap, thanks to success of OBOR

**GDP growth averages 5.6% per year**
2018- 2025

**Scenario 2 – Struggling through**
Debt problems are a drag on economy, but full-scale financial-sector crisis avoided
New industries thrive, but don’t fully make up for shutdowns
Air pollution crisis resolved, but soil and water pollution not dealt with
OBOR programme only partial success

**GDP growth averages 4.6% in 2018-2025**

**Scenario 3 – Failure**
Major financial sector crisis occurs
Growth of new industries long way short of replacing shutdowns
Failure to bring air, soil and water pollution under control – major middle class exodus, and health cost crisis
OBOR fails because of political and economic complexity

**GDP growth averages just 3.6% in 2018-2025**
How this would effect polyethylene

- Scenario 1 - PE consumption increases by 10m tonnes in 2025 over 2018
- Scenario 2 - PE consumption increases by 7.8m tonnes
- Scenario 3 - PE consumption increases by 5.7m tonnes

ICIS Supply & Demand Database
Drop in imports Scenario 3 versus Scenario 1

Total 17.8m tonnes lost imports, assuming same production
Opportunities & Risks in China

- Middle East already has strong position in China
- Can strengthen that position through the OBOR, and through using hydrocarbons advantage
- But the key risk: What if China’s reforms fail?

China's HDPE imports

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The old Globalization system is over – we need to adapt

The companies that win in this transition will be those that:

- Align themselves with the new global trade blocs, especially OBOR
- Balance the needs of their own economy with the needs of their customers
- Recognise that growth at all costs is not the way to win
- Embrace sustainability as the key driver of the Chemical Industry from this point forward
Changing free trade dynamics and the impact on Middle East petrochemicals

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