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Risks mount for US ethylene exports

Producers cannot rely on expanding export markets to absorb excess capacity. China is becoming self-sufficient and there will be fierce Middle East competition

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US exports of polymers face increasing pressure so US producers need to develop new growth strategies

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The world's ethylene producers are facing some painful decisions in coming years. Production has expanded rapidly in N America and the Middle East on the basis that China would also need increasing imports of polyethylene (PE) and other derivatives.

But in reality, China is now moving rapidly towards PE self-sufficiency. It already produces two-thirds of its own demand, up from just half in 2020. And it is still building major new domestic capacity. So where will all the new US and Middle Eastern export-oriented capacity go?

Polypropylene (PP) highlights the likely direction of travel. Trade Data Monitor (TDM) statistics show that imports supplied 55% of China's 11.6 million tonnes/year of PP demand in 2005. But by last year, imports were just 5%, even though demand had risen to 33 million tonnes. China's PE market seems likely to follow the same path.

In turn, this raises a critical question of 'What happens next in the US market?' The chart showing US ethylene production and operating rates since 2010 highlights the key issues:

- Between 2010 – 2015, output rose slowly from 24 million tonnes to 26 million tonnes as the US economy recovered from 2008's subprime crisis, and operating rates averaged a healthy 91%
- But output then soared to 41 million tonnes by 2023 as producers expanded capacity by 40% in the excitement generated by the shale gas revolution
- Unfortunately, and predictably, exports failed to reach the anticipated level, and operating rates fell sharply over the period to just 80% last year

We warned here in March 2014 that this was likely ("US boom is a dangerous game 24-30 March"): "US ethylene producers need to work out where all the new ethylene production is going to be sold before embarking on the planned frenzy of cracker construction". But as one CEO told us after reading the analysis, "You may well be right, but every time I mention shale on an earnings call, the stock goes up $5".

In turn, of course, this highlights the underlying problem. The US Federal Reserve's focus on boosting asset prices to create economic growth meant that investors were uninterested in the nuts and bolts of investment decisions. They wanted a simple story along the lines that shale gas provided: "US ethylene producers were about to undergo a manufacturing renaissance based on a massive increase in exports". After all, everyone "knew" that China would always be growing at double digit rates, and would "always" require increasing volumes of imports.

Today, of course, the problem of rising over-capacity and falling operating rates is obvious even on Wall Street. And unfortunately, there appear to be no obvious solutions to the problems that have developed. In terms of ethylene equivalent demand, TDM data shows US exports have risen by 12 million tonnes since 2015, with PE accounting for 9 million tonnes, MEG for 2 million tonnes and ethylene itself for 1 million tonne. But when we look at the regional picture, it is clear that China has disappointed with volume up just 3 million tonnes. The balance has gone to Latin America, Europe and SE Asia who have each taken around 2 million tonnes, with the rest going to India, the Middle East and within NAFTA.

A look at China's net imports of the key products raises more red flags. TDM net trade data for PE suggests that a battle for market share is well underway. NE and SE Asia are already being squeezed, leaving the US to battle the Middle East. The picture is even clearer in MEG, with SE and NE Asia down to a combined 1 million tonne versus 3 million tonnes in 2015. Once they have gone, it will again be a battle between the US and Middle East to be the 'last man standing'. And whilst the US does have cheap ethane, the Middle East's key focus is on

preserving demand for its oil. And so it is quite happy to supply its oil into new joint venture plants in China, which will further reduce the available market for US imports.

China's economic weakness

This highlights a further looming problem. China's economy is continuing to weaken due to its property market collapse. Construction was 29% of GDP in 2021. But since then the bubble has begun to burst in spectacular fashion. This month has even seen major developer China Vanke joining Country Garden in potentially following Evergrande (now also accused of $78bn fraud) into bankruptcy. So it would be no surprise at all if China's demand for PE and other petrochemicals actually now begins to decline in coming years as a result.

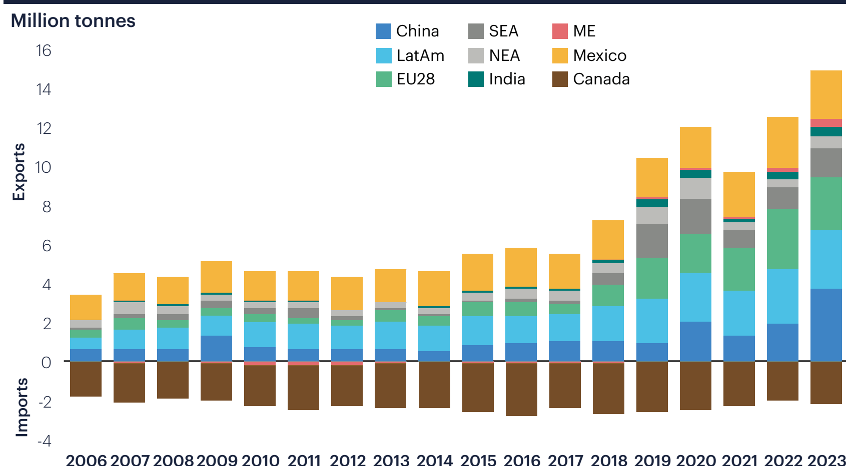
The problem for US producers today is that there is no obvious solution to the over-capacity problem. In the past, some have suggested Africa might be a suitable alternative destination to China. But realistically, whilst it does have 1 billion people, they are too poor to generate anything like the required volume. Its GDP per head is just $2080 versus an average $62,000 for the wealthy G7 countries, according to IMF data. And a further problem is looming.

Globalisation, and global supply chains, are increasingly being replaced by 'local-for-local' production as the BabyBoomer-led SuperCycle comes to an end. Increasing life expectancy means that the aging Boomers have now joined the Perennials 55+ cohort in large numbers. They are now the main source of population growth today in the world, and in nine of the top ten economies. The Perennials are lovely people, but they are a major headwind for growth. They already own most of what they need and their incomes decline as they move into retirement.

Essentially, therefore, N American producers need to develop new business models based on becoming demand-driven rather than today's supply-led strategies. Europe is already leading the way with its new Antwerp Declaration, developed by industry group CEFIC and major companies along with the European Commission. As CEFIC president and BASF chairman Martin Brudermüller highlighted at its launch last month, "We want to drive the transformation of our companies".

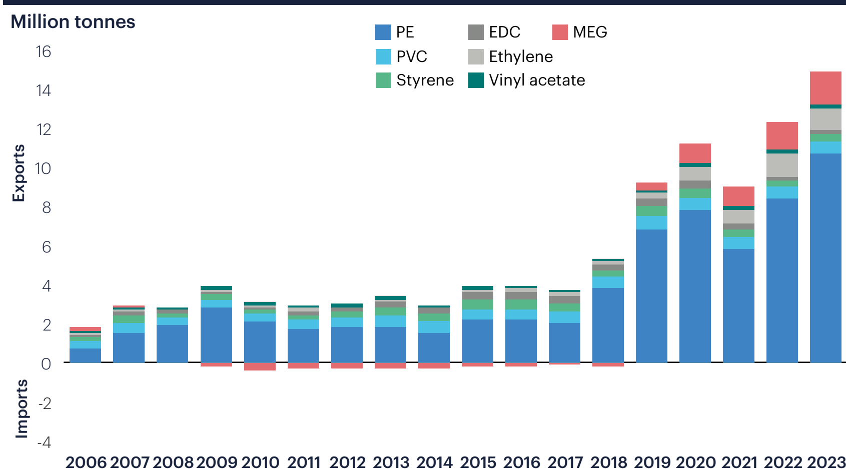
The issue is simply that 'Business as Usual' no longer means doing the same thing tomorrow as yesterday. Instead, as Russia's invasion and the Israel/Gaza conflict confirm, it means continuing instability and a rising risk of military flashpoints. China's decision to vastly expand its manufacturing base, to compensate for the property downturn, also creates a real risk that we will next see a return to 'beggar-my-neighbour' trade policies and trade wars. As the USA is already demonstrating, countries are unlikely to allow key industries like

US ethylene equivalent trade flows (2006-2023)



Source: pH Report, Trade Data Monitor

US ethylene equivalent trade flows (2006-2023)



Source: pH Report, Trade Data Monitor

autos and petrochemicals to be destroyed by imports, and millions of well-paying jobs lost.

Scenario Planning has therefore become essential. And this is not just the scenario planning of the SuperCycle years, where high and low cases were almost the same as the base case. Today's planning has to ask awkward questions – what might happen in Europe if Russia succeeds in its invasion of Ukraine? What might change in US domestic and foreign policy if Donald Trump returns to the White House? What might happen if OPEC+ decided to further disrupt energy markets – either by reducing its output to support prices, or by abandoning quotas with the aim of closing down higher-cost US and non-OPEC production? What might happen to ethane supplies and prices as a result?

Future Winners in this New Normal world will be those companies that realise that today's key question is no longer, "Do we have low-cost supply?" It is instead "Do we have a customer who is willing and able to buy from us?" As the Antwerp Declaration confirms, there is an urgent need to combine the green agenda with forward-looking industrial strategy. Governments have to lead the way (as is already happening in the USA) in promoting the move to Net Zero products and services, and in developing advanced chemical recycling technologies.

Essentially the key issue is that rethinking, repositioning and restructuring are now essential for the industry's survival. There is no doubting the challenges ahead. But every challenge is also an opportunity for those who are prepared to think 'out of the box' about the way forward. They will be the major winners of the future. ■

Paul Hodges is chairman of New Normal Consulting and the Advisory Board for Infinity Recycling. He publishes The pH Report and writes the ICIS Chemicals & the Economy Blog.