Goodbye to business as usual model

Just as capacity expansions come on stream in the US, increasing global polymer supply, recycling targets and the circular economy mean demand is likely to decrease

Increasing concern about the health of the oceans is driving recycling rules

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PAUL HODGES INTERNATIONAL ECHEM

Polymer markets face two major challenges in coming months. The most immediate is the arrival of the major US shale gas-based ethylene and polyethylene expansions. The longer-term, but equally critical challenge, comes from growing public concern over plastic waste, particularly in the ocean. The EU has set out its vision for a new plastics economy, where "all plastic packaging is reusable or recyclable in a cost-effective manner by 2030". Similarly, China has launched a 'War on Pollution', which has already led to all imports of plastic waste being banned.

Together, these developments mean there is unlikely to be a "business as usual" option for producers or consumers. A paradigm shift is under way which will change business models. Some companies will focus on being low-cost suppliers, integrated back to the well-head or refinery. Others will become more service-led, with their revenue and profits based on exploiting the value provided by the polymer (virgin or recycled), rather than just the value of the virgin polymer itself.

The next 18 months are therefore likely to see major change, catalysed by the arrival of the new US production. As discussed here previously (ICB, 'US boom is a dangerous game', 24-30 March 2014), US ethylene capacity is set to rise by nearly 9m tonnes by the end of 2019, a one-third increase; polyethylene (PE) capacity will rise by 6m tonnes, a 40% increase.

The chart indicates the potential impact of these new capacities by comparison with actual production since 2000, with 2019 volume forecast on basis of the planned capacity increases. But can this new PE volume really be sold? It certainly won't all find a home in the US, as ExxonMobil Chemicals' then President, Stephen Pryor, told ICIS in January 2014: "The domestic market is what it is and therefore, part of these products, I would argue, most of these products, will have to be exported".

The chart (right) shows the export mountain that will instead have to be climbed:

- US net exports actually fell by 6% between 2015 - 2017 to 1.9m tonnes
- The main market was Latin America, where volume also fell to 1.4m tonnes
- Net exports to China did rise by a third, but were still only 650,000 tonnes last year
- Meanwhile, net imports from Canada, boosted by its own shale gas expansions and logistical proximity to the northern US, rose 27% to 800,000 tonnes.

EXPORT MOUNTAIN TO CLIMB

Against this background, it will be very hard for the US to even treble its net export volume by the end of next year. And unfortunately for producers, President Trump's new trade policies are unlikely to help them in the main potential growth market, China. As John Richardson and I noted here a year ago, China's $6tn Belt and Road Initiative "creates the potential for China to lead a new free trade area including countries in Asia, Middle East, Africa and potentially Europe – just as the US appears to be withdrawing from its historical role of free trade leadership" (ICB, 'A War of Words' 24-30 March 2017).

The task is also made more difficult by the inventory-build that took place from June onwards as Brent oil prices rose 60% to peak at $71/bbl. As usual, buyers responded by building inventory ahead of price increases for their own raw materials. Now they are starting to destock again, slowing absolute levels of demand growth all around the world, just at the moment when the new capacity comes on line.

It therefore seems likely that US producers will be forced to keep cutting prices to move the new product, causing margins to eventually slide from peak to trough levels across the main value chains:

- Integrated producers will gain competitive advantage, whether they are based on ethane in North America and the Middle East, or naphtha-based crackers in Europe and Asia integrated back into refineries. Ethane-based producers can effectively "roll-through margins" from the well-head to polymer production, given that ethane's volatility can create a need to extract it from natural gas streams even at relatively low concentrations. Naphtha-based crackers integrated into refineries have similar "roll-through" strengths and are also unlikely to shutdown simply because PE prices come under pressure.
- However, all is not lost for the non-integrated companies. Or indeed, for those companies producing polymers that compete with PE,

whose margins are also likely to suffer from the coming price war. Necessity is, after all, often the mother of invention. They have the opportunity to instead accelerate their development of more service-led business models, by aligning themselves with the demand for increased polymer recycling and reuse.

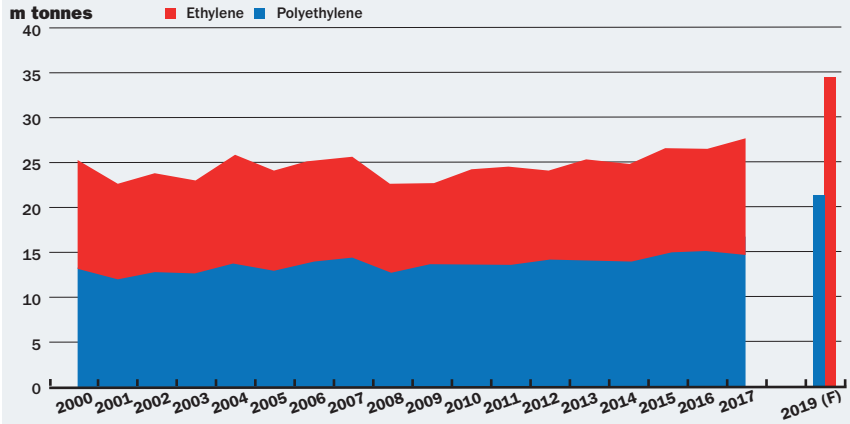
The initial catalyst for this demand was the World Economic Forum's 2016 report on 'The New Plastics Economy', which warned that on current trends, the oceans would contain more plastics than fish (by weight) by 2050 – a clearly unacceptable outcome. Last year's BBC documentary Blue Planet 2, narrated by legendary UK wildlife expert and broadcaster, Sir David Attenborough, then catalysed public concern over the impact of single use plastic in packaging and other applications. Even Queen Elizabeth has since announced that she is banning the use of plastic straws and bottles across the royal estates, as part of a move to cut back on the use of plastics "at all levels".

As BP's chief economist warned last month, "around the world you see increasing awareness of the environmental damage associated with plastics and different types of packaging".

Single use plastic applications in packaging are likely to be an early target for the move to recycling and the circular economy. This will have a major impact on demand, given that they currently account for more than half of PE demand:

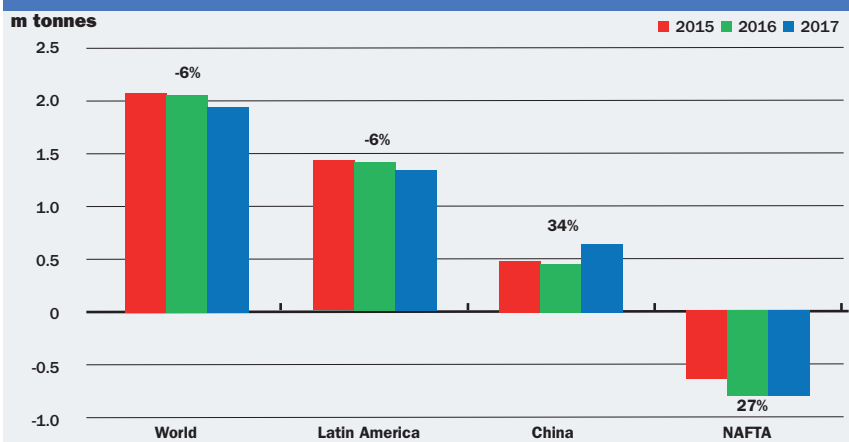
- Two-thirds of all low density and linear low density PE is used in flexible packaging – a total of 33m tonnes worldwide
- Nearly a quarter of high density PE is used in packaging film and sheets, and a fifth is used in injection moulding applications such as cups and crates – a total of 18m tonnes worldwide.

US ETHYLENE, PE PRODUCTION 2000-2017, 2019 (F)



SOURCE: pH Report; American Chemistry Council

US POLYETHYLENE NET EXPORT/IMPORT TRADE 2015-2017



SOURCE: pH Report; US Department of Commerce

NEW BUSINESS OPPORTUNITIES

Virtually all of this production is potentially recyclable. Producers and consumers who want to embrace a more service-based business model therefore have a great opportunity to take a lead in creating the necessary infrastructure, in conjunction with regulators and the brand owners who sell the product to the end-consumer.

This will likely also start to change the paradigm for polymer manufacturing, away from world-scale plants towards a more localised model. Companies such as Recycling Technologies are piloting small-scale chemical plants that can operate on land-fill sites and at the mouths of heavily plastic-polluted rivers. These will initially just convert waste plastic back into cracker feedstock and other applications. But in the longer-term, they will become polymer producers in their own right, supplying local convertors and creating an entirely circular economy.

The good news for the non-integrated companies is that this new market opportunity seems likely to develop relatively quickly. Many major users such as Coca-Cola have already pledged to recycle all their packaging, worldwide, by 2030. Other companies have adopted even faster timescales, given the mounting pressure from consumers. China's 'War on Pollution' is also a clear sign that consumers in the major emerging economies share the same priorities.

Change on this scale is never a comfortable process. But burying one's head in the sand and hoping it will never happen is likely to prove much more painful. Of course it is possible to argue that the industry has over-expanded before, and that demand has then effectively caught up again within a few years. But that seems unlikely to happen this time, given the strength of public concern over plastic pollution, particularly in the ocean.

Essentially today's paradigm shift means that sustainability is replacing globalisation as a key driver for profitability in the polymer industry. Those companies who take on the challenge of creating new business models, based on the need to dramatically ramp up plastics recycling and reuse, will likely have decades of profitable growth ahead of them. ■

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KEY FACTS

- US ethylene capacity to rise by nearly 9m tonnes by 2019. PE will rise by 6m tonnes, a 40% rise
- US will need to export much of this
- But US net exports actually fell by 6% in 2015-2017 to 1.9m tonnes
- Prospect of trade war will make exports even tougher
- Demand may fall as recycling targets kick in
- Two-thirds of all low density and linear low density PE is used in flexible packaging
- Nearly a quarter of high density PE is used in packaging film and sheets