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GLOBAL TRENDS
DOWN THE CHAIN
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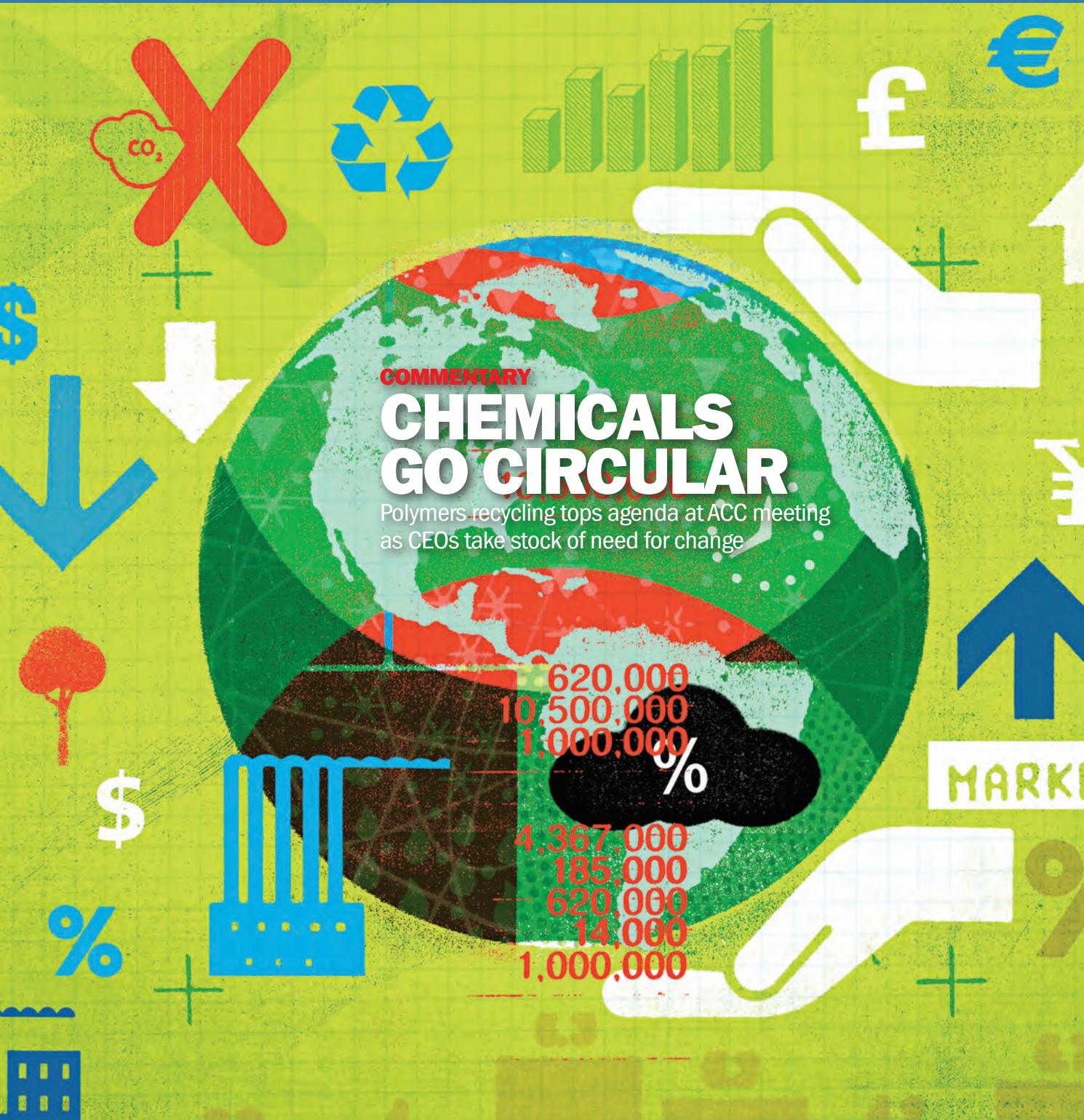
GROWTH DECLINES
Chemical production growth to fall as trade and political tensions put pressure on economy **9**

US MMA
Tight supply expected to persist amid increased demand from coatings, construction sector **39**

15-21 June 2018

ICIS Chemical Business

MAKING SENSE OF CHEMICAL PRICES



COMMENTARY

CHEMICALS GO CIRCULAR.

Polymers recycling tops agenda at ACC meeting as CEOs take stock of need for change

620,000
10,500,000
1,000,000
%
4,367,000
185,000
620,000
14,000
1,000,000

MARKET



Recycling moves up the agenda

Chemical companies have to take notice of the shift in public and regulatory concerns about plastics and include recycling in their future business models

PAUL HODGES INTERNATIONAL ECHEM

A paradigm shift is under way in the plastics industry as public concern mounts over the impact of plastic waste on the oceans and the environment.

For 30 years, plastics producers have primarily focused upstream on securing cost-competitive feedstock supply. Now, almost overnight, they find themselves being forced by consumers, legislators and brand owners to refocus downstream on the sustainability agenda. It is a dramatic shift, and one which is likely to create winners and losers over a relatively short period of time.

The pace of change is startling. In January, 11 major brands, including Coca-Cola, Unilever, Walmart and Pepsi (and since joined by

Nestle) announced they were committed to working towards using “100% reusable, recyclable or compostable packaging by 2025”. Then, in April, a UK government-led initiative saw 42 companies, responsible for over 80% of the plastics packaging sold in UK supermarkets, promise to “transform the plastic packaging system and keep plastic in the economy and out of the ocean”.

Tesco, the UK’s largest retailer, added to the pressure by beginning the move to a “closed loop system”. Clearly seeing the issue as a source of potential competitive advantage, it announced plans to remove all “hard to recycle” plastics – such as polystyrene, polyvinyl chloride (PVC) and water-soluble bioplastics – by the end of next year. Then last month, the EU Commission adopted new rules that will mean a minimum of

50% of all plastic packaging waste will be recycled by 2025. In addition, it has proposed drastic action, including bans, to reduce the use of the top 10 single-use plastic items found on EU beaches by 2021.

Understandably, many companies and CEOs have failed to keep up with these developments. Others have simply ignored them on the assumption they will prove to be all talk and no action. But nobody who attended the Circular Economy Forum at the recent ICIS World Polyolefins Conference could have come away believing that business as usual was a viable option for the future. As Borealis, Europe’s second largest polyolefin producer, explained, its vision is instead to “establish plastic waste as just another standard feedstock as the new normal” for the industry.

Different geographies will doubtless move at different speeds with the switch to recycling. But Europe is not the only major region where a big change in attitudes is under way. It is already clear that consumers in the emerging economies have exactly the same priorities as those in the West. Indonesia, for

» example, recently had to use its army to unblock rivers in its third city, Bandung, as these had become filled with plastic waste. China is similarly engaged in a “war on pollution”, which is seen by President Xi Jinping as one of his “three tough battles” to secure China’s goal of “becoming a moderately prosperous society” by 2020.

CRITICAL BUSINESS IMPACT

This paradigm shift will have two critical impacts on business models in the petrochemicals and plastics industry. In the short term, it will reduce demand growth and could easily lead to demand destruction. The end of next year is only 18 months away for polystyrene and PVC producers, after all. In the medium to longer term, it seems probable that waste plastic will become an important feedstock in its own right, reducing actual demand for virgin feedstocks based on oil and gas.

As producers start to prepare their budgets for 2019-2021, they therefore cannot ignore the fact that the rise of the sustainability agenda will likely be the catalyst for a fundamental shift in business models for the whole plastics industry. Polyethylene (PE) was already heading into major over-capacity due to the US shale gas expansions now coming on line, as discussed here in March (*Goodbye to business as usual model*, 16-22 March). Now it and polypropylene (PP) are under threat from the likely reduction in demand for single-use plastics due to rising concern over the impact of plastic packaging.

This will impact the entire petrochemicals value chain. As the chart, below, confirms, PE is the largest volume plastic, with 92m tonnes produced in 2017, while 68m tonnes of PP was produced. And more than half of PE, and nearly a third of PP, goes into single use packaging. Following the World Economic Forum’s New Plastics Economy report in 2016, and Sir David Attenborough’s *Blue Planet II* series for the BBC, this application is now under major threat.

The New Plastics Economy involves lead-

ing participants from across the global plastic packaging value chain. Its report warned that on current trends, the oceans would contain more plastics than fish (by weight) by 2050 – a clearly unacceptable outcome. The issue is not that PE, PP and most other plastics can’t be recycled. It is simply that the recycling industry has failed to understand the true value of waste plastic as a resource.

Plastics Europe estimates, for example, that Europe produced 60m tonnes of plastics in 2016, but recycled just 5.3m tonnes of plastic post-consumer waste within the EU. This highlights the challenge to current business models in the plastics industry, and the opportunity.

Access to competitive sources of feedstock has been seen as a choice between oil and gas – principally between naphtha in Europe, Asia and Latin America, and ethane in North America and the Middle East. But now recycled plastic is set to be the growth feedstock. The Recycling Technologies company, for example, has developed a modular machine based on pyrolysis technology that chemically recycles unsorted, post-consumer plastics into cracker feedstocks, with the aim of installing a minimum of 10m tonnes/year capacity within 10 years (*Polymer recycling comes of age*, ICB 25-31 May).

WINNERS AND LOSERS

Paradigm shifts generally produce winners and losers. In this case, the winners will include those plastics producers that adapt to the new opportunity created by the need to produce recycled plastic. This will clearly require investment in recycling facilities, but the sums involved are small compared to the cost of building new olefin crackers or refinery capacity. And in many countries, producers can even expect to be paid to take the recycled plastic as a feedstock, when the alternative is the cost of sending it to landfill.

Business models are already starting to change. The current model was highly successful during the baby boomer-led economic supercycle, when demand grew on a constant

PAUL HODGES

Chairman, International eChem

“In many countries, producers can even expect to be paid to take the recycled plastic as a feedstock”

basis. Companies could choose to compete via cost leadership or value-added strategies, or via a focus on premium products or service orientation. But now the middle ground is starting to disappear: demand growth is slowing and profits will be squeezed as competition intensifies. We are instead going back to the polarised model that existed before the 1980s:

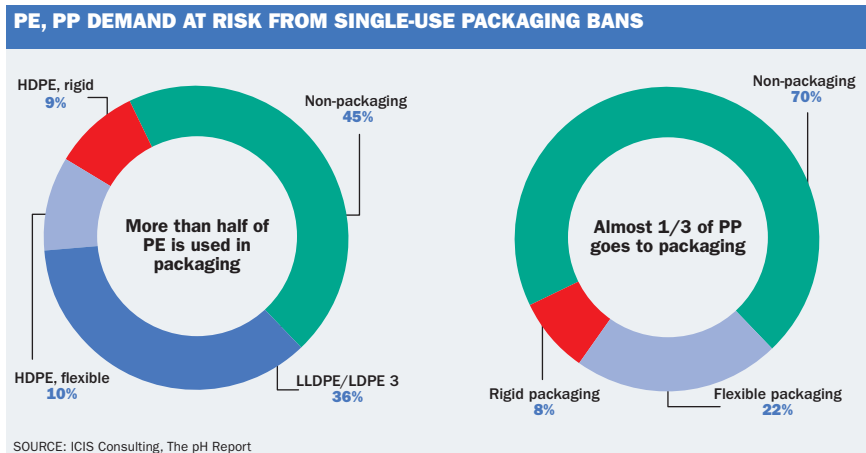
- Upstream-integrated companies can choose to adopt a feedstock focus and roll through their margins to the well-head (in the case of ethane) or refinery (in the case of naphtha) as margins come under pressure.
- Those without this ability, however, need to instead adopt a market focus, as intensifying competition will squeeze non-integrated companies without the safety net of an upstream margin.
- Market-focused companies have the opportunity to respond to brand-owner and legislative pressure by basing their feedstock needs on recycled plastic rather than naphtha, ethane and other virgin feedstocks.
- They will need to develop new metrics to measure their progress as they start to build their capability to use recycled feedstocks and create long-term relationships with brand-owners and other stakeholders.

These developments are, of course, bad news for existing feedstock suppliers, which risk becoming losers in this New Normal world. Unfortunately, many oil and gas majors have failed to appreciate the potential impact of the sustainability agenda. Instead, they have mistakenly assumed that rising demand for petrochemicals will help to compensate for demand lost as a result of the changes under way in the transport sector. Similarly OPEC’s recent World Oil Outlook 2040 saw petrochemicals as providing “significant growth” for the future. The International Energy Agency will also need to revisit its assumptions about future demand growth as the impact of the new paradigm becomes more apparent.

As National Geographic reported, the world has produced around 8.3bn tonnes of plastic over the past 60 years, and only 9% has been recycled. This is a shocking waste of a resource. The paradigm shift under way is well overdue and should prove very profitable for those companies that seize the opportunities it creates. ■



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JOSEPH CHANG NEW YORK

Target: plastics waste

Actual plastic resin producers must get involved, even if they cannot directly control the streams of plastic waste going into the oceans. Doing nothing is not a choice

The circular economy just got another big push from the US – the world's fastest growing country for new plastics volumes.

Driven by increasing consumer awareness about plastic waste, especially in the oceans, the EU kicked off the circular economy discussion in earnest in January with a framework to achieve 100% of all plastics packaging in the EU either reusable or recyclable in a cost-effective manner by 2030.

But it is critical the US gets on board, as it is the country most aggressively boosting plastics capacity on the back of advantaged shale gas.

The awareness of marine plastic waste has only grown with the publication of a series of graphic images along with multiple articles on the effects of plastics pollution on marine wildlife by National Geographic magazine, at least one copy of which appeared at the American Chemistry Council (ACC) annual meeting in Colorado Springs in early June.

The impact of these types of photos was acknowledged by Jerry MacCleary, CEO of Covestro LLC, who is also chairman of the executive committee of the ACC board of directors.

At the meeting, the ACC laid out its commitment to reducing plastic waste with its own circular economy goals to achieve 100% of plastics packaging being recyclable or recoverable by 2030, and 100% of plastics packaging actually reused, recycled or recovered by 2040.

The awareness of marine plastic waste has only grown with the publication of a series of graphic images by National Geographic

Plastics waste was at the top of the agenda at the ACC press briefing at the annual meeting, with LyondellBasell CEO Bob Patel and Chemours CEO Mark Vergnano, along with ACC CEO Cal Dooley advocating for real commitment by its members and developing concrete solutions.

Patel is also chairman of the board of the ACC, and Vergnano vice chairman.

This move by the leading US chemical trade group requires leadership and dedication. Critically, after the ACC annual meeting, the association announced that Dooley has agreed to delay his retirement and extend his tenure as CEO through 2019 instead of retiring at the end of 2018.

"The global chemicals and plastics industry has an imperative to fight the spread of mismanaged plastic waste that is increasingly littering our rivers, oceans and landscapes," said Dooley.

He called ending plastic waste "an issue of personal, as well as professional interest", and called for "swift and aggressive actions to make the most of all resources and leverage technology to dramatically increase rates of reuse, recycling and recovery of all plastic products."

Actual plastic resin producers must get involved, even



Awareness on marine plastic waste is growing

if they cannot directly control the streams of plastic waste going into the oceans, which are coming predominantly from Asia. Any positive actions they can take should be explored and then executed, if feasible. Doing nothing is not a choice.

The most effective solutions will ultimately come down to collection and recycling – two competencies the developing world lacks at the moment.

The collection should ideally be done on land before the waste hits the waterways, but there are also technologies being developed to collect plastic waste from the sea for recycling.

Collection is not a core competency of plastic resin producers either, and they are not likely to delve into this business in a big way. However, they can partner with waste management companies – firms that are experts in collection.

LyondellBasell in March invested in Netherlands-based plastics recycling company Quality Circular Polymers (QCP) in a joint venture with SUEZ, where SUEZ will seek to improve waste collection for feedstock at QCP to produce virgin quality polyethylene (PE) and polypropylene (PP).

While operations will initially be focused in the Netherlands and Germany, where recycling awareness and capabilities are high, LyondellBasell aims to replicate the technology and operations elsewhere over time.

Producers should make sure they have an actual stake in recycled plastics, said Paul Bjacek, principal director at Accenture, at the ACC meeting. He pointed out that by 2040, around 275m tonnes/year, or almost a third of global plastics supply, will be "new" recycled material representing "lost conventional capacity".

It is going to be a long journey to a plastics circular economy and the chemical industry is in the very early stages. But now the wheels are turning. ■

Additional reporting by AI Greenwood



Click here to hear the ACC discuss circular economy in the ICIS Americas Podcast



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