

# R Recycling International

## The summer of scrap

Plastic cups and flip-flops among festivals' most-littered items

Hong Kong welcomes ALBA's model for e-scrap recycling

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Growing concern over China's scrap import ban

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Technology: Emerging markets offering wider sales scope

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*'Fate of plastics recycling market is unclear'*

Surendra Patawari Borad  
page

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### Friday, 13 October 2017

Internal Meetings

### Saturday, 14 October 2017

Workshop on India (full day)

### Sunday, 15 October 2017

09.00 **Stainless Steel & Special Alloys Committee**  
10.30 **Ferrous Division**  
12.30 *Networking luncheon*  
14.00 **Textiles Division**  
15.30 **Tyres & Rubber Committee**  
16.30 **International Environment Council**  
19.30 **Welcome Evening**

### Monday, 16 October 2017

09.30 **Plastics Committee**  
10.30 **Non-Ferrous Metals Division**  
12.30 *Networking luncheon*  
14.00 **World Council of Recycling Associations**  
15.00 **Paper Division**  
16.30 **E-Scrap Committee**

*\*Subject to change*

More information on the Convention Programme, Online Registration and Sponsorship Opportunities on [www.bir.org](http://www.bir.org)

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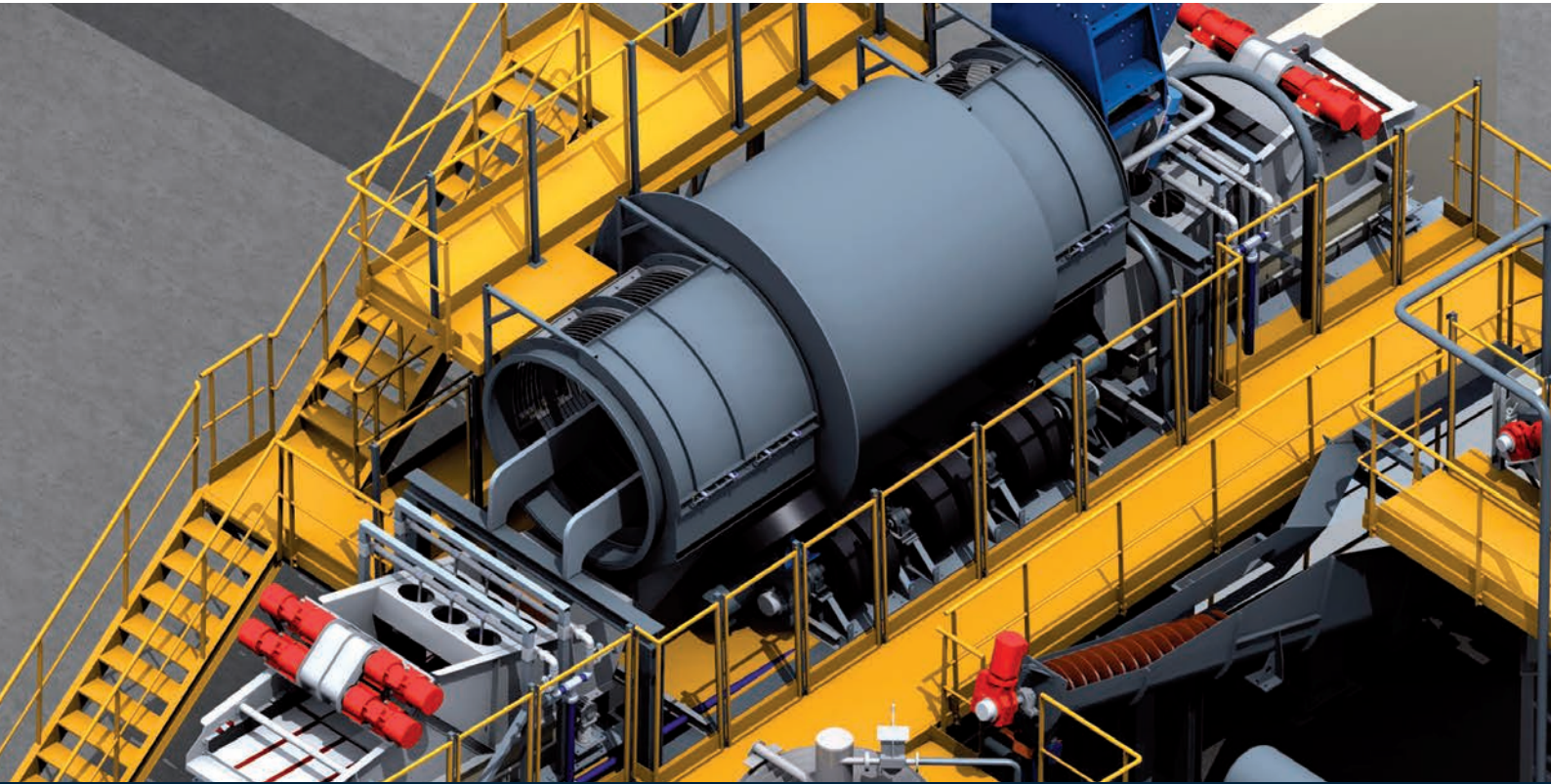
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# Confusion reigns

The international recycling industry is on tenterhooks, consigned to a prolonged period of doubt over precisely which of its materials will be banned from importation into China, the world's largest market. China has notified the World Trade Organization (WTO) of its intention to ban certain imports, cajoled by the country's environmentalists who insist that China should not become the dumping ground for other countries' 'wastes'.

*'A ban would have a devastating effect'*

The environmental lobby has become ever more powerful in China and seems to be winning the debate over the fate of secondary raw materials which they have dismissed under the collective banner of 'foreign garbage'. The various forms of scrap plastics, paper and metals mentioned in the ban proposal (see market reports in this issue for more details) are worth billions of dollars and help support many thousands of jobs in China and beyond.

China's own industry high-fliers have failed to persuade the government that these imported materials are vital to the country's own industrial production and development. The BIR world recycling organisation and the US Institute of Scrap Recycling Industries, among other leading bodies, have thrown their considerable weight behind the argument that such a ban would have a devastating effect on the multi-billion-dollar global recycling industry and, furthermore, on the Chinese and global economies as well as on the environment itself.

Even though China has supplied the WTO with a list of materials it

plans to ban from importation, contradictory feedback and enormous uncertainties prevail. Let's take just one example: China's list of material types to be banned from import included 'unsorted' waste paper and yet a leading buyer for the Chinese market has been told that the ban will extend to 'sorted' mixed paper, to take effect as soon as the last vessel is loaded at the end of August. Who's right? We don't know. If this stricture leaves the Chinese short of fibre, will they rescind this ban order? Who can know.

Contributing to this issue of Recycling International, Ken McEntee of The Paper Stock Report suggests US exporters generally don't believe Chinese mills can run without the 2.5 to 3 million tons of mixed paper that the US ships annually to China (and perhaps three times that amount if you combine all overseas suppliers). Many exporters, in the USA and beyond, believe 'mixed' paper will still move to China under another classification. But will any new classification be acceptable to China or to its environmental lobby groups? At present, nothing but confusion reigns.

David Chiao, president of the BIR non-ferrous metals division, has insisted that speculation about what materials will be banned should be avoided and hearsay should be ignored ahead of an official announcement by the Chinese government. And he is perfectly correct to say so. But as Recycling International heads to press, uncertainty is crippling the recycling sector, undermining not only current trading activity but also future planning. Hopefully, by the time you're reading this, much-needed clarification will have been forthcoming. ■

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**14** **Cover story** With recycling gaining ever more momentum, how much of a priority is it for the hundreds of thousands of music fans who each year attend major music festivals?



**20** **Trade show** Increasingly, emerging markets are offering business opportunities for recycling equipment manufacturers, as highlighted by the latest Recycling-Technik fair in Dortmund, Germany.



**E-scrap** A state-of-the-art facility and collection infrastructure developed by ALBA are being hailed as a model for the electronics recycling industry in Hong Kong.

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**Technology** New developments in marker technology for sorting plastics packaging should not be viewed as the answer to increasing recycling rates, concludes Axion Consulting.



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Cover photo: Fotolia/gpointstudio

## China and Hong Kong boost US aluminium scrap exports

The opening five months of this year brought an almost 13% increase in US aluminium scrap exports. Overseas shipments jumped from 540 239 tonnes in January-May 2016 to 609 148 tonnes in this year's corresponding period, according to latest figures from the US Census Bureau and US International Trade Commission.

The overall increase to all destinations was mirrored by the spike in Chinese purchases of US aluminium scrap, with the Asian giant upping its order by 13.7% in the first five

months of this year to 322 415 tonnes from 283 543 tonnes in January-May 2016. Shipments from the USA to Hong Kong surged 83.8% to 30 066 tonnes.

South Korea was another major market for US aluminium scrap, boosting its requirements by 31.9% year on year to 71 626 tonnes. Mexico and India also increased their purchases - the former by 12.2% to 59 122 tonnes and the latter by 29.2% to 26 546 tonnes. In contrast, volumes heading north into Canada edged 5.1% lower to 45 744 tonnes.



## The Green State sees decline in bottle and can recycling

**Known as the eco-friendly US state,** California has seen a surprising reduction in beverage container recycling. The recycling rate for cans and bottles has slipped below 80% for the first time since 2008, according to CalRecycle, the organisation promoting recycling in California.

This decline is attributed to the closure of many local recycling centres, numbers of which have fallen by around 50% state-wide in recent years, according to a

waste management programme manager from Sacramento. 'Scrap value for plastics and aluminium cans and other types of material for beverage containers has gone down,' ABC News has been told. Another factor is that China, where much of the scrap goes, has started to clamp down on the types of material it will accept from other countries - a development which has impacted the price of materials in the USA, experts argue.

## Asia takes 90%-plus of CEPI's paper for recycling exports

**The Confederation of European Paper Industries (CEPI)** has announced the publication of its latest Key Statistics booklet reviewing last year's pulp and paper industry developments among its 18 member countries.

Available to download at [www.cepi.org](http://www.cepi.org), the booklet confirms that the recycling rate for the 17 EU member states plus Norway climbed from 71.9% in 2015 to 72.5% last year as usage of paper for recycling edged 0.1% higher from 47.751 million tonnes to 47.792 million tonnes - equivalent to 46.2% of all raw materials consumed by CEPI members' paper and board mills.

The booklet provides analyses of paper for recycling usage by country, sector and grade. It also reveals that the CEPI region's paper for recycling exports jumped 5.6% last year to 10.655 million tonnes, with 9.77 million tonnes - or 91.7% of the export total - heading to customers in Asia.

CEPI members' paper and board production slipped 0.1% in 2016 to 90.931 million tonnes, with packaging papers and sanitary/household recording respective year-on-year gains of 2.4% and 1.1% whereas graphic papers registered a decline of 3.8%. Consumption of paper and board in the CEPI region was 0.3% higher last year at 77.4 million tonnes.





## US salon cutting waste by recycling hair products

In the USA, large volumes of hair clippings and unused hair products end up in landfills and waterways - so a salon in Nashville, Tennessee, has decided to do something about it, according to a local media report. 'It just goes along with what we believe in personally and what we do at home,' says Lauren Gish, co-owner and stylist at Fruition Salon. 'We have a bin for unused colour, a bin for hair and a bin for our foils. And we separate them and we send them to a warehouse in Chicago, and then they have a recycling facility that takes care of all those things for us.'

The Nashville initiative is being promoted by Green Circle Salons, a company from Canada that helps individual salons to 'go green'. According to Green Circle, partnering salons have recycled and repurposed more than 1000 tonnes of waste since 2009. Customers pay an extra US\$ 2 eco-fee per hair service to help support the programme. 'I think at first people can be a little grossed out,' says Gish. 'But I think that they think it's really cool, especially once we explain to them how much more effective hair is and what science is coming up with for the fibres and how they can be recycled.'

## Future vision: nuclear waste recycling

The US uses only around 1% of the total energy available from nuclear power processes, meaning there is a significant amount of radioactive waste but not sustainable solution for it. The question of what to do with this nuclear fuel was at the heart of new research at the University of Notre Dame. The outcome: it may be able to take nuclear waste recycling to the next level.

'Nuclear energy accounts for 20% of the United States electricity,' comments professor Peter C. Burns, who oversaw the research project. He points out that the sector has been standing still ever since President Jimmy Carter outlawed nuclear fuel recycling some forty years ago.

'Despite the fact that nuclear energy has a low carbon footprint,' Burns and his research group have now developed a method that causes uranium - a naturally occurring element - to form clusters of uranium nano-molecules that could potentially be turned back into useable fuel. This innovative process starts after a used fuel rod, which holds the uranium to produce nuclear energy, has been cooled under water for 10 years. After cooling down, the waste can be dissolved to form initial uranium nano-molecules, which are then filtered to purify the uranium. Burns explains that this development could benefit filtration systems in the nuclear waste recycling process.

## Business

### ASUS

Taiwanese tech firm ASUS has set itself the 'ambitious goal' of recycling 20% of its global e-scrap stream by 2025 through optimising the recyclability of its products and packaging as well as boosting its network of recycling centres. ASUS recycled close to 11 000 tonnes of end-of-life electronics in 2016, representing a 12.2% recovery rate for total products sold. In line with its extended producer responsibility vision, ASUS plans to establish a new recycling operation covering 40 different locations in the key market of India. [csr.asus.com](http://csr.asus.com)



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## Time to say a fond farewell

The time will arrive for me to say goodbye to Recycling International on August 31 - some nineteen and a half years after this publishing adventure was first started by Manfred, Jan Willem and me. Since 1998, we have managed to build Recycling International into the magazine we envisaged all those years ago. Of course, we could not have achieved this without our Recycling International colleagues Esther, Kirstin and Martijn (as well as former colleagues Gert-Jan, Nichole and Judith), and also Ian Cooper (who helped us in our first year), Fred Nijkerk and Ian Martin (who has edited every issue of Recycling International since August 1999). Thanks too to the many others who have worked on the production of the magazine.

I also would like to say a big thank-you to all the people in the industry who have helped and supported us over all those years, especially our freelance writers, fellow members of the trade press, staff within recycling associations all over the world with whom we work closely and, of course, our readers and advertis-



ers. It has been a pleasure to work with you all.

I will certainly miss the recycling community. It is a wonderful industry with great people, from management to those working on the sorting and processing lines. Over the years, Manfred and I have visited many scrap facilities all over the world and I have never ceased to be impressed by everyone's dedication to making this industry great.

A lot has changed but, I think, only for the good. The industry now has a better image and people all around the globe have a deeper understanding of the importance of recycling. The Global

Recycling Day initiative set for March 18 2018 will be a further giant step towards convincing people to take care of our environment.

Thank you all for your very kind co-operation and friendship over the years. I have had a great time and will always carry wonderful memories. I wish you all the very best. And you never know, maybe our paths will cross again ...

Sincere regards  
Helga Fresen

## European containerboard market 'at risk of oversupply'

**Sixty-one containerboard machines** across Western and Central Europe 'face above-average risk of closure' against a backdrop of potential market oversupply, warns a study from leading sector analyst RISI. The research covered 216 containerboard-producing machines at 164 mills in 27

different European countries, evaluating each facility and operating company according to a range of factors from technical age and productivity of machines to raw material and energy supply strategies. The European containerboard market is 'at risk of oversupply', claims the study's

lead author Ville Henttonen, RISI's senior product manager for mill intelligence. 'While some of these machines are at risk of being closed, others could instead be sold, as part of a possible shakeout in this fragmented industry.'

[www.risi.com/closurerisk](http://www.risi.com/closurerisk)



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## Plastic bags: final warning for Greece, Italy, Poland and Cyprus

The EU Commission has set a final deadline for four member states to enact EU rules intended to reduce consumption of lightweight plastic carrier bags. Greece, Italy, Poland and Cyprus are being given two months in which to transpose the EU Plastic Bags Directive into their national legislation; should they fail to come up with a satisfactory response within that period, the Commission may refer the cases to the European Court of Justice.

Adopted in 2015, the Plastic Bags Directive is intended to engineer a dramatic cut in the consumption of carrier bags with a wall thickness of less than 50 microns. The directive obliges member states to take measures which may include implementing charges for these bags and/or introducing national reduction targets that ensure no more than 90 lightweight carrier bags are consumed per person per year by the end of 2019 and no more than 40 bags by the end of 2025. The deadline for transposing the Plastic Bags Directive into national law expired on November 27 last year.

## Joke of the Month

### Winners and losers

On a brutally hot day during the holidays, a father is playing a round of miniature golf with his two children. 'Who's winning?' asks a passer-by cheerfully. 'I am,' says one of the youngsters. 'No, I am,' snaps the other. 'Actually,' says the father wearily, 'it's their mother.'

## EuRIC throws open doors to first European Recycling Conference

The European Recycling Industries' Confederation (EuRIC) is accepting registrations for the first-ever European Recycling Conference on October 5 this year. Organised in conjunction with Italian association Assofermet's Annual Day and taking place at the Grand Hotel Villa Torretta Sesto San Giovanni in Milan, the event is expected to attract traders, recyclers, consumers and machinery suppliers from across Europe.

The conference begins with EuRIC's open general assembly which will cover the latest relevant regulatory and economic developments at European level, as well as threats and opportunities for recyclers and traders. This will be followed by a keynote presentation entitled 'Trading metal scrap: What comes next?' from Murat Bayram, head of European non-ferrous business at European Metal Recycling.

Several networking opportunities, including a cocktail reception and dinner, will be incorporated into the schedule.

Those registering before September 8 can take advantage of 'early bird' booking rates, organisers confirm.


[www.euric-aisbl.eu/european-recycling-conference](http://www.euric-aisbl.eu/european-recycling-conference)

### Veolia

Waste management and recycling major Veolia has launched a new-style recycling scheme for businesses, their staff and customers in the UK in a bid to prevent 'millions' of used takeaway drinks cups from going to landfill. This initiative follows 'successful' trials by Costa Coffee and Starbucks, as well as research suggesting only one in 400 cups in the UK is recycled because of difficulties with the paper and plastic mix. With a total investment of around Euro 3 million, Veolia has designed a unit for cafés, offices, shops and transport stations that enable customers and staff to stack the cups on a rack to drain in preparation for bulk batch collection by the company or return using a post-back service. The collected cups will be reprocessed into new products. [www.veolia.co.uk](http://www.veolia.co.uk)

### Reclay

The Reclay Group, an international service provider in the field of recycling and recyclables management, is extending its activities into Eastern Europe. The Germany-based corporation has taken over Slovenia's Trans Impeks plastics recycling operation and renamed it Reclay Materials. 'The takeover means that we will be able to continue our expansion into Eastern Europe and our successful development of the plastics recycling sector in this region,' comments Kai Hoyer, managing director of Reclay Materials GmbH, the division of which the Slovenian operation has now become a subsidiary. [www.reclay-group.com](http://www.reclay-group.com)



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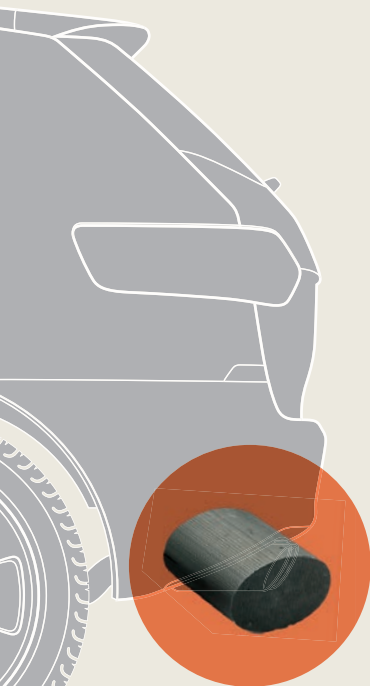
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## Mattress recycling: a US success story

Americans throw out 20 million mattresses and box springs every year, according to US recycling programme Cascade Alliance. On the plus side, the recycling sector is having a significant impact on employment levels: for every 10 000 tons of mattresses diverted from landfill, between 40 and 50 jobs are created.

Around 240 000 mattresses and box springs have been recycled by Cascade Alliance members since its launch back in 2013, saving communities as much as US\$ 481 465 in refuse bills while recovering 15 million pounds of materials from the waste stream. Additionally, the recycling effort has generated more than US\$ 10 million in revenues for member organisations. According to Cascade Alliance, the states of California, Connecticut and Rhode Island have become champions of strict mattress recycling stewardship; as a result of recycling laws passed in 2015, they have been able to recycle 1 million mattresses, saving 11 million cubic feet of landfill space in the process. There are currently 56 mattress recycling facilities in North America, representing a 30% increase over 2013. Cascade Alliance's facilities recycle as much as 90% of a mattress, thereby saving 23 cubic feet of landfill space per unit, adds the non-profit recycling programme.

In recent years, major retailer Ikea has voiced its commitment to recycling the mattresses it sells - thus helping to make mattress recycling 'a burgeoning industry', says Cascade Alliance.

[www.cascadealliance.us](http://www.cascadealliance.us)

## Automotive sales continue to drive Novelis' shipment growth

'Leveraging our unmatched global manufacturing footprint, innovative technology and closed-loop recycling systems, Novelis has become a preferred choice for automotive aluminium sheet,' declares the company's president and ceo Steve Fisher in reporting a 'strong' operational performance by the business in the first quarter of its latest financial year. Year on year, the aluminium rolling and recycling specialist more than tripled its net income to US\$ 103 million while shipments of 785 000 tonnes represented an increase of 4%, with shipments of higher conversion premium automotive products bettering the average in jumping 16%.

Novelis' net sales climbed 16% year on year to US\$ 2.7 billion in the first quarter of the 2017/18 fiscal period.

### Cleanaway

Major Australian recycler Cleanaway has opened a 50-tonnes-per-hour single-stream materials recovery facility in Perth. Manufactured by Bulk Handling Systems (BHS), it has the capacity to process 250 000 tonnes per year, claimed to be enough to sort all of the city's residential recyclables. David Williamson, the company's general manager for Western Australia, claims the high-tech facility has an unmatched capability designed to address Perth's recycling needs for the next decade and beyond. 'With the city's population set to reach 3 million by 2020, Perth households and businesses will be producing more waste than ever before,' he points out.

[www.cleanaway.com.au](http://www.cleanaway.com.au)

### Suez

Waste management company Suez has formed a joint venture with Dutch recycler Kempenaars Recycling in a bid to find a 'clever' way to handle hard-to-process plastic waste sustainably.

To be known as SK Polymers, the collaboration will serve to enable 'large-scale sorting and recycling of hard plastics', says Eric Kempenaars, owner of Roosendaal-based Kempenaars Recycling. 'Doing so will truly close the loop for plastics and stimulate the circular economy.' Suez encounters large volumes of plastics of varying sizes and rigidity when picking recyclables from Dutch households and businesses.

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## People

### Michael Pownall

UK recycling industry stalwart and character Michael Pownall has died at the age of 79 after a long illness. Michael and his brother John ran the Nottingham-based McIntyre group of companies. He later founded Nottingham Metal Recyclers, which at its peak had a turnover of over £60 million and employed 160 people. More latterly, he was involved in the scrap metal machinery business with J. McIntyre Machinery Ltd and JMC Recycling Systems Ltd, also of Nottingham. JMC continues to sell equipment worldwide and is run by Michael's sons, Phillip and David, and daughter Sally.

Michael was a former president of the British Secondary Metals Association (which combined with the British Scrap Federation to form the British Metals Recycling Association) and a regular attendee of the conventions of the BIR world recycling organisation.

## Spurt in stainless production: China and USA lead the way

**Global melt shop production** of stainless steel surged 14.5% year on year in the opening quarter of 2017 although the total of 11.763 million tonnes was 3.5% shy of the 12.193 million tonnes produced in the closing three months of 2016.

Figures from the International Stainless Steel Forum show that China was responsible for around 53% of the first-quarter world output total with its 6.225 million tonnes - an increase of 19.4%, or more than 1 million tonnes, over the same period last year. Production throughout Asia (excluding China and South Korea) climbed 6.5% year on year to 1.992 million tonnes while Europe's total was 6.1% higher at 1.98 million tonnes. However, the largest output spurt was reserved for the USA with its 36.2% increase from 530 000 tonnes in the opening quarter of 2016 to 721 000 tonnes. In the latest Mirror publication, BIR stainless steel & special alloys committee chairman Joost Van Kleef warned that 'China is again exporting its oversupply of stainless'. He also noted that stainless scrap values 'are on the high side relative to primary raw materials' and so there exists 'a high probability of a less attractive price environment during the third and fourth quarters'.


## GumBuddy has a recycling message that sticks

**Walking down the street**, it's hard not to spot pieces of discarded chewing gum scattered all around. Unique Dutch venture GumBuddy is now collecting the hateful litter to create a line of products that people wouldn't expect, namely flip-flops. Some 5.5 million packets of chewing gum are sold in the Netherlands each year, a lot of which ends up on the floor or stuck to park furniture where it can remain for up to 25 years before degrading. Cleaning up this sticky mess is an expensive business, costing approximately Euro 250 million per year in total or some Euro 15 per inhabitant, according to GumBuddy.

Describing used chewing gum as 'a resource worthy of recycling', the start-up has begun placing gum bins and 'stick it here' gum boards at local hotspots. By adding the right polymers, all colours and flavours of collected gum can be recycled into rubber accessories, confirms research partner Fontys University. GumBuddy is also looking into creating a series of mobile phone cases from this unusual source material.


[www.gumbuddy.nl](http://www.gumbuddy.nl)

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# Does the recycling message find its echo during festival season?

‘Music was my first love, and it will be my last.’ Those words sung by British singer John Miles back in the 1970s still ring true today, as is evident from the growing number of music festivals organised all around the world. With recycling seemingly gaining momentum, how much of a priority is it for the hundreds of thousands of music fans who each year attend major music events like Glastonbury.





© Juliana Bernstein/Get. Tiny Photography

## Most littered items at festivals

- Plastic bottles
- Abandoned tents
- Camping gear
- Cigarette butts
- Beverage cans
- Flip-flops
- Foam earplugs
- Plastic cups
- Rain capes
- Napkins and baby wipes
- Cardboard food trays
- Umbrellas
- Sunglasses
- Sleeping bags
- Sunscreen lotion bottles
- Dirty blankets
- Rubber boots
- Posters and flyers from bands

### By Kirstin Linnenkoper

When it comes to music festivals, there is one golden rule: limit what you bring and leave nothing behind. The reality, however, is that people arrive on the scene practically carrying their weight in equipment and are all too eager to leave their clutter to be dealt with by the clean-up crew

With thoughts occupied by securing a highly-valued ticket to the event, parking, queuing, reserving the most desirable spot on the camp site, constant hygiene issues and celebrating top bands with friends, there is no mystery to why resource efficiency is firmly on the back burner for most festival-goers.



Cleaning up the waste left at Glastonbury Festival costs around US\$ 1 million and can take up to 6 weeks to complete.

According to 2015 research by the US Institute of Scrap Recycling Industries, people aged between 18 and 34 are 'less likely' to recycle on a regular basis. Only 33% of surveyed Americans are active recycling supporters whereas 53% of those aged 65 and over say that recycling is the responsible thing to do. Obviously, the younger age group supplies the majority of the audience at music festivals.

So how do festival organisers try to focus people's minds on litter avoidance and recycling? And really, how important is recycling to a commercial festival business that needs to juggle everything from visitors' complaints to technical issues, property maintenance, event security and the whims of their A-list acts?

### Eco-DNA

The colourful Boom Festival in Portugal proves that there can be 'a great balance' between entertainment and resource efficiency, according to Lucy Legan, co-founder of Brazil-based Ecocentro IPEC. The family-friendly event takes place every two years at the Idanha-A-Nova lake, attracting some 42 000 visitors. The most recent edition in 2016 saw the collection of 25 500 kg of plastics, roughly 13 000 kg of paper and cardboard, and more than 9000 kg of glass. A notable proportion of the recyclables were used to create new stages, light fixtures and art for future 'Boomland' events, while the remaining materials were sent for processing at a nearby recycling centre.

Directly after its second edition, the Boom Festival's high level of commitment earned it the Outstanding Greener Festival Award 2008, which it won again in 2010, 2012 and 2014. Other accolades include the Green Inspiration Award in 2012 and the European Festival Award for Green Excellence in 2014.

'The challenge is that everyone who attends a festival brings their own experiences and cultural mindset; we have to create a community consciousness that supports sustainability,' argues Legan. As with designing products with recycling in mind, she is convinced that recycling behaviour 'can be designed into a festival's DNA'.

Having collaborated with the organisers of the Boom Festival on several occasions, she knows they are eager to 'keep pushing the boundaries'. This is the way to go, Legan insists, adding: 'If you're running a good festival, don't be distracted by winning prizes. Don't be satisfied with current results. Ultimately, you can and must always ask the question "How can we do better?".'

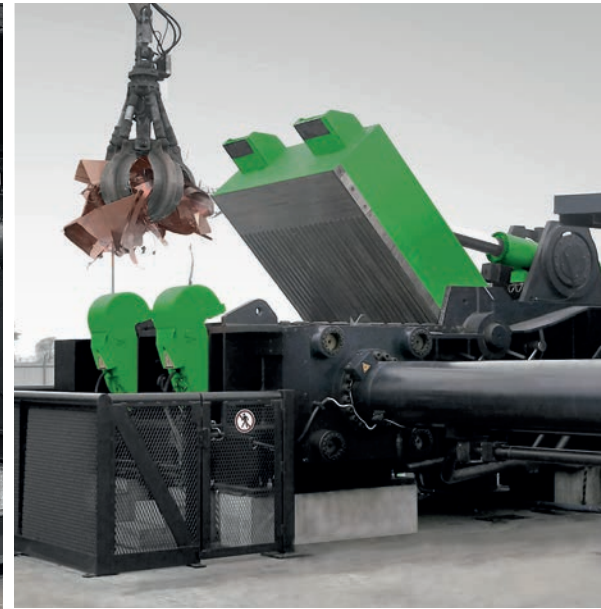
### Glastonbury: the aftermath

One of the best-known and biggest music events is the Glastonbury Festival in the UK, which attracts around 200 000 visitors during its four-day run in rural Somerset. Dealing with the major refuse build-up is no small matter, costing around £785 000 (US\$ 1 million) and taking up to six weeks to complete. That's why organisers established the Recycling Crew to tackle the estimated 2000 tonnes of waste effectively, with access to several tractors helping the process.

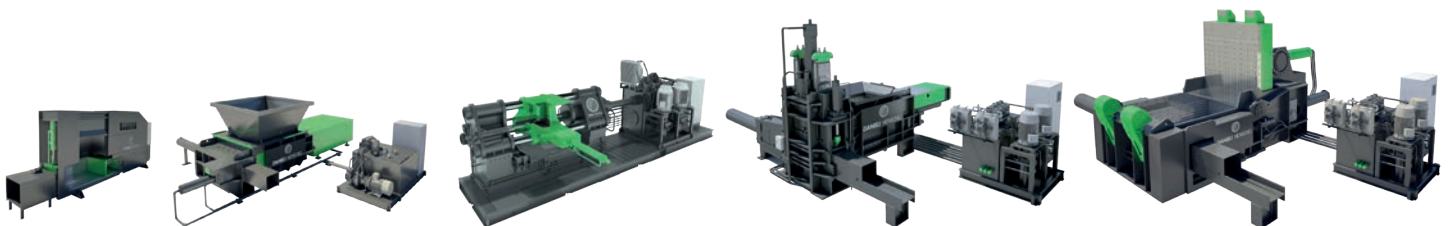
So what does the aftermath of Glastonbury actually look like? In 2015, no less than 6500 sleeping bags, 5500 tents, 3500 airbeds, 2200 chairs and 950 roll mats were abandoned at the conclusion of the festival. Other items left behind included laughing-gas canisters, depleted batteries, muddy Wellington boots and broken sunglasses. Although local charities got involved to boost reuse figures, upwards of 50% of all these left-overs were either landfilled or incinerated.



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To cater to Glastonbury's 'tent city', the event organisers put out more than 15 000 bins for different types of recyclables across the entire festival area. Their mission to do 'whatever it takes' to recycle or compost remaining materials has not been in vain: this year, only 100 volunteers were needed to aid in the clean-up operation instead of the 600 required in the past thanks to waste-pickers making their rounds during all live performances.

As a reward for their 24 hours of labour, all volunteers receive a free pass to the festival - no mean incentive as tickets usually change hands for £240 (US\$ 310) and generally sell out within an hour.

## 'Burners' leave no trace

Another phenomenon that needs little introduction is the US happening known as Burning Man. The annual meet-up in the middle of Black Rock Desert is a test of endurance for festival-goers as temperatures can soar up to 90 deg Fahrenheit (32 deg Centigrade), accompanied by dust storms and tropical downpours.

The legendary event featuring music and futuristic sculptures annually attracts a crowd of 60 000, spanning the entire musical spectrum from techno-punk, goth and folk to everything in between - and all these people want more than just to enjoy themselves. 'Burners', as visitors are called, are seeking a deeper connection with the world and they have one code that supersedes all others: leave no trace.

As a result, 'moop' (material out of place) must be cleared away on a daily basis during the festival so as to ensure the desert is left looking completely untouched. Breaking the no-littering code is considered a grave offence by this tight-knit community. Even celebrities such as singer Katy Perry have found in recent years that no VIP privileges are extended to them and that they must also pick up after themselves.

Burning Man City is made up of a number of camps, each with its own theme; one of these is Recycle Camp, which aims to instil ecological principles in festival-goers. A primary objective is to collect as many aluminium cans as possible each year. That's why members belonging to the Recycle Camp make daily trips around the extensive site with their bicycle trash carts. This crew of 'Recyclenauts' has managed to collect more than 100 000

## Cardboard boxes reinvented

In the Netherlands, one out of every four people leave their trash behind at the end of a festival - and that often includes tents, says Wout Kommer, a student at the Technical University of Delft and co-founder of KarTent. This statistic poses a huge waste management problem for event organisers and so Kommer pondered how to create a tent that is less likely to end up on the rubbish heap.

'The answer is a little unusual - cardboard,' says Kommer. 'It makes sense if you think about it. Cardboard is foldable, lightweight and very easy to recycle.' That realisation was the start of a new venture to create robust, camp-ready structures out of cardboard that, after several tests, proved themselves capable of withstanding mud and even the most torrential of the downpours regularly experienced in the Netherlands.

In collaboration with cardboard manufacturer Smurfit Kappa, which provided free material, KarTent produced a 100%-recyclable prototype series, with each unit created out of a single sheet of cardboard. After some retooling, waterproofing of the



tents was finally achieved. 'We left the tents outside for a number of days, exposed to the elements; they remained fully dry on the inside,' Kommer reports.

Admittedly, the big Dutch festivals such as PinkPop and Lowlands took some convincing about these new tents. 'They probably thought "Who are those crazy guys from Delft?"' says Kommer with a smile. Fast-forward to the present and KarTent has been an integral part of 10 festivals across the country. This innovative concept has also won the Red Dot Design Awards 2017, beating leading brands like Apple and Rolls-Royce. 'We pulled it off,' enthuses the young entrepreneur, seeing his tent concept as proof that 'you must not just accept the so-called boundaries of materials applications'.

[www.kartent.com](http://www.kartent.com)

aluminium cans for recycling at a single event. As Burning Man is a non-commercial gathering, all proceeds are donated to local schools.

The intrinsic value of resources is further promoted via walk-in refurbishment and scrap art workshops where artists and regular visitors are given the task of transforming used goods and packaging into 'things of beauty'.

## Bottle caps become skateboards

Another example of challenging people's concept of recyclables is WasteBoards, a venture that creates skateboards largely out of discarded plastic bottle caps. Marius Smit of Dutch company Plastic Whale is behind the business, which sources the



Besides bottles and cans, sleeping bags and tents are commonly littered items.

# R cover story

brightly-coloured caps from music festivals and other large events.

This pop-up recycling initiative centres around a mobile oven wherein plastic bottle caps are put into a mould for melting and 'baking' into skateboards. 'The cool thing is that the bottle caps are still visible and that every board is unique,' Smit points out. He hopes this hand-crafted, high-quality approach will help convince people that there is a 'green side' to festival waste.

Latest items produced in the WasteBoards Bakery include a WasteCabinet and a WasteChair, as well as a WasteBasket for bikes.

## Zero-waste objective

According to Smit, the 'new skate of mind' was warmly received at DGTL Revolution. This quirky Amsterdam-based event won last year's Greener Festival Award from global assessment agency



**festival organisers hope the presence of colourful waste bins will improve the recycling behaviour of its thousands of visitors.**

A Greener Festival. This eco-event body praised: DGTL's successful deposit scheme for reusable plastic hard cups which relies on solar energy; the recycled cotton merchandise made by Pure Waste Textiles; and the setting-up of a network of drop-off points for food packaging and other litter. Furthermore, generators were run on biodiesel made from reclaimed cooking oil.

More than 400 people volunteered to be trash pickers, thus earning them free tickets and after-party passes to the under-

ground techno gathering. This is a testimony to DGTL's core objective - to become the world's first zero-waste festival.

Music fans seem to agree that resource management at What The Festival is 'pretty much perfect'. Organisers of the art-meets-music gig in the US state of Oregon are known to be supporters of the Leave No Trace campaign, thus taking all imaginable measures (see box entitled 'Biggest mistakes') to deal properly with waste. Upwards of 90% of festival-goers are believed to heed the recycling plea, and the widespread support for recycling has been epitomised in two five-foot high 'Trash Totem' sculptures.

## Still dirty

Among the events still passionately attempting to go as green as possible is Coachella. The 'dirty' but creative event in California has featured a true eye-catcher: a trash-eating T-Rex. The metal scrap sculpture appropriately named Recyclosaurus effectively encourages people

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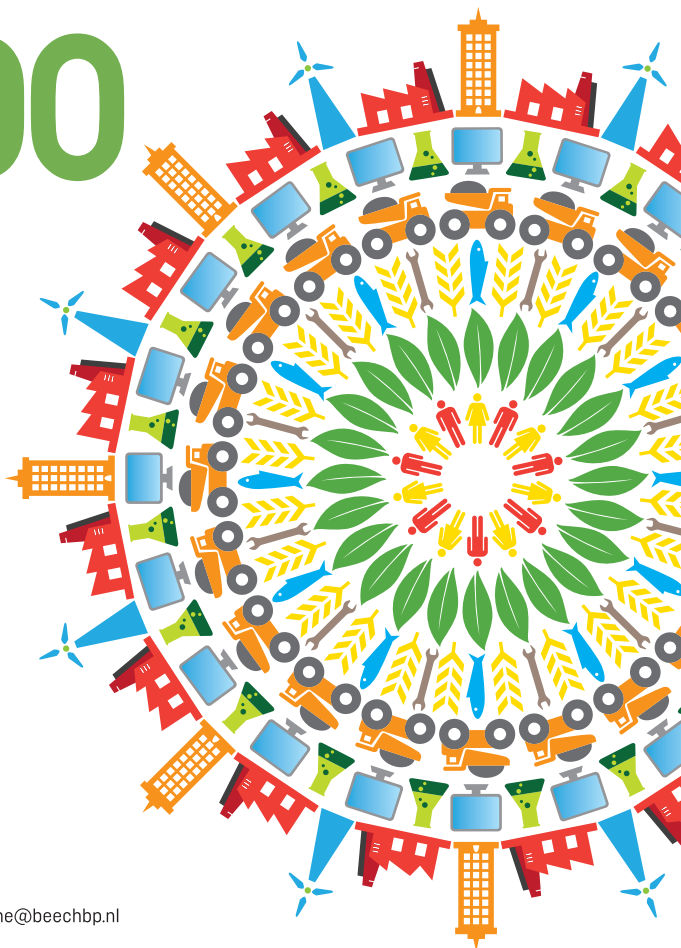
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Burning Man visitors have a strict 'no waste allowed' policy.

## Biggest mistakes by festival organisers

- Leaving no budget for sustainable practices
- Not installing enough trash cans
- Collecting recyclables only once at the end of every day
- Not hiring a clean-up crew or seeking out volunteers
- Offering no rewards or refunds for returning bottles/cups
- Not providing visitors with plastic bags to store recyclables
- Sending all waste directly to land-fill
- Not promoting sustainable practices before and during the event
- Not collaborating with eco groups, municipalities and agencies
- Not using merchandising, stages and screens to convey the recycling message

to dispose of their waste in designated bins (in this case, in its giant mouth) as opposed to throwing it on the ground. This underlines the organisation's belief that even trash bins ought to form part of 'the festival experience'.

Crew members at the Trashed Recycling Store, run by non-profit group Global Inheritance, reward those returning stray

plastic bottles with anything from VIP ticket upgrades and T-shirts to a free ride on a Ferris wheel. Despite these innovative efforts, the laid-back crowd at Coachella has yet to integrate eco-consciousness into their two weekends' worth of care-free fun.

Worse yet, the Sasquatch festival in the US city of George is referred to by its 170

000 visitors as 'Trashquatch'. Despite being located in the 'green' state of Washington, the event has been criticised for failing to grasp the concept of a circular economy. Following the event's expansion from a one-day to a four-day spectacle in recent years, festival organisers have acknowledged that sustainability has become the victim of budgeting concerns. ■

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Live explosion control demonstrations drew massive crowds.

## Recycling-Technik:

# Emerging markets offering wider sales scope

Manufacturing is one of those areas in which Germany stands out and its annual Recycling-Technik fair proved once again that this reputation is well merited. Suppliers converged on Dortmund from across Europe and demonstrated this is not the time to let innovation take a back seat.

**By Kirstin Linnenkoper & Martijn Reintjes**

**M**ore than 6700 visitors and 500 exhibitors flocked to the much-anticipated Recycling-Technik trade show held, once again, in the industrial hub of Dortmund, Germany's eighth-

largest city. The event's record-breaking attendance figures represented increases of 3% (visitors) and 10% (exhibitors) over last year's edition. The show took place against the backdrop of Germany's accept-

ance of the higher 65% recycling target for municipal solid waste, to be achieved by 2030. This fits with Chancellor Angela Merkel's support for 'making sustainability the guiding principle of the EU'.

## Award for Spaleck



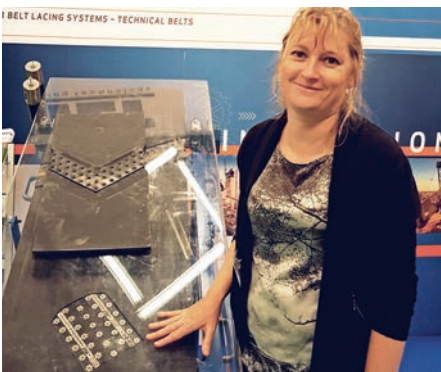
From left to right: Spaleck's Rainer Elfring, Markus Döbbelt and Andreas Ahler.

At Recycling-Technik, a technology award - as well as Euro 5000 in prize money - went to Spaleck GmbH & Co. KG. The winning innovation was ActiveClean for the handling of sticky, wet materials - six of which have been sold since its release earlier this year. This 'self-cleaning' conveyor system is said to facilitate 'maximum performance at zero costs'.

In the past, explained Spaleck's ceo Andreas Ahler, plant operators would have had to stop their lines on a regular basis to remove, for example, the hardened slag that had accumulated in the conveyor channel whereas ActiveClean enables equipment to be run 'continuously' while saving money on manual cleaning.

[www.spaleck.de](http://www.spaleck.de)

## MLT: quick fix for belts



MLT is expanding its portfolio of belt repair modules so that waste management does not include wasting money.

Among the many shredder and baler manufacturers at the show, French company Minet Lacing Technology (MLT) offered various patented conveyor belt solutions. 'Recyclers have to process a lot of bulky materials, and those can seriously damage the belt,' noted communications manager Myriam Moretton. 'We want to make sure that businesses can quickly fix the belt instead of having to replace it, meaning they no longer have to stop operations for several hours.'

One of its popular options is Super-Screw: available in customised configurations, this is a rubber lacing which is screwed onto the belt to cover the torn area and which can cope with any weather conditions.

'Whatever belt modules our customers require, they know that our solutions help make the most of their operations,' Moretton observed.

[www.mlt-lacing.com](http://www.mlt-lacing.com)

## Fraunhofer: don't wait for new legislation



Joseph Dörmann (left) and Jan-Philip Kopka are pioneering C&D waste recycling in Germany.

Germany's Fraunhofer Institute used the Recycling-Technik show to spotlight its BauCycle recycling project for construction and demolition (C&D) waste. This initiative pioneers an optical sorting process that can sort 1.5 tonnes per hour at a cost of roughly Euro 5 per tonne. It is specifically aimed at the fine fractions - including lime and concrete flakes as well as brick fragments - that make up around 5 million tonnes of an annual C&D waste stream in Germany which exceeds 50 million tonnes.

With strict legislation in the pipeline, it is only a matter of time before the landfilling option is taken off the table, the Fraunhofer experts argued. Therefore, they said, it is better to 'beat politicians to the punch'

by coming up with an innovative way to treat the waste right now rather than a couple of years down the line. Germany's C&D waste stream is simply too big to 'wait for legislation to improve', they stressed.

[www.baucycle.de](http://www.baucycle.de)

## Presona: seizing opportunities in emerging markets



Presona's export sales manager Stefan Lewandowski and Nina Bergner, representative of Presona Germany.

Baler producer Presona's export sales manager Stefan Lewandowski confirmed in Dortmund that Europe remains 'a huge and stable' market for the company. At the same time, the Swedish manufacturer is witnessing 'exciting developments' across the Atlantic, with Mexico being 'a booming market'. Having noted that paper recycling giant Smurfit Kappa has invested a substantial sum in a production capacity expansion in Mexico, he added: 'Six big balers have been shipped out and many more are expected to follow.'

There is a huge need for recycling and waste management solutions across all emerging and growing economies - not only in South America but also in Asia, according to Lewandowski. A market regarded as having large sales growth potential for Presona is Thailand. 'Only 13% of all the waste in Thailand is currently being collected and recycled,' he explained. 'The systems and infrastructure are not ready yet, but there's a strong ambition to develop and increase capacity. Moreover, there is money to invest.'

Sales developments in Eastern Europe are described as 'stable but not spectacular', with much depending on EU funding. 'The less money coming from Brussels, the less is invested in new recycling equipment and technology,' said Lewandowski.

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# R trade show

## Forrec: multiple sales to Thailand



Forrec's sales executives Barbara Belletti and Cristiano Perin.

Like baler producer Presona, Italian recycling systems expert Forrec is seeing big opportunities in South East Asia and especially Thailand. According to the company's sales manager Cristiano Perin, the Thai government wants to clean up all the country's landfills. 'They have started doing what some European countries are

only thinking of,' he said in Dortmund. To assist in this task, Forrec has sold seven shredding lines to Thailand: three were delivered in 2016 and the other four were shipped to Bangkok only recently.

Nearer to home, Forrec is seeing an increase in sales opportunities in Belarus where the company is involved in a 'major' recycling project. At the same time, serious leads in Russia have been 'put on hold' owing to political and economic difficulties, Perin confirmed. 'Hopefully, this will change for the better soon,' he added.

[www.forrec.eu](http://www.forrec.eu)

### A 'must-attend' event

'It was our first time exhibiting at Recycling-Technik in Dortmund, and it was absolutely the right decision,' stated Manfred Eßmann, sales manager for Austrian shredder supplier Lindner Recyclingtech.

The company claims to have gained a competitive advantage through its 'intelligent modular design', which means

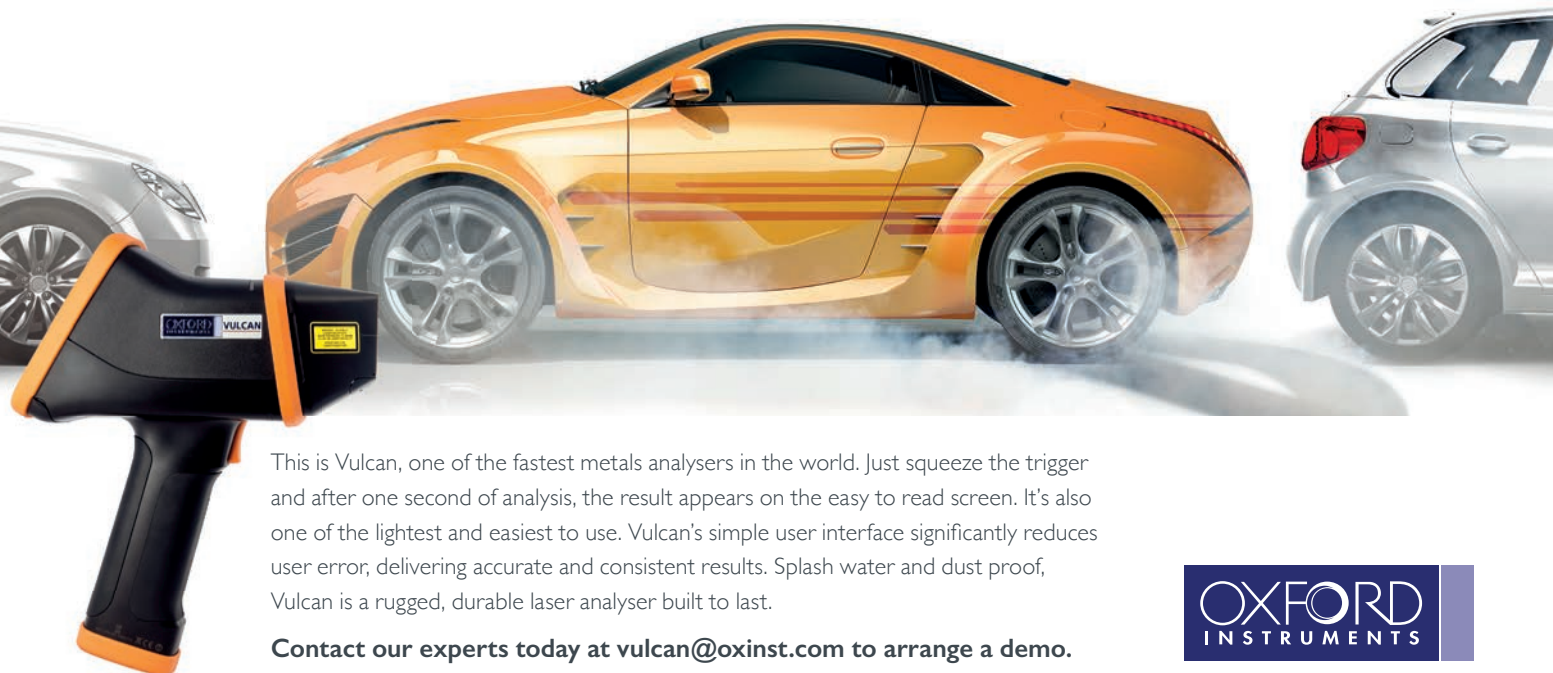
The next edition of Recycling-Technik has been scheduled for November 7-8 2018, with Dortmund once again to be the venue.

that up to 80% of Lindner's machine parts are used across all its shredders. Among the many benefits of this approach, easy adjustments can be made to suit individual requirements while training time for workers is greatly reduced and their safety is optimised. 'Trade visitors came with specific enquiries; from the approximately 50 top-quality contacts we made, we're expecting some good orders,' Eßmann said.

Tim Stratmann, engineering and maintenance specialist at Aurubis AG, also gave the event a positive review, contending that Recycling-Technik had evolved into a 'must-attend' event for those active in the recycling industry. ■

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New facility seen as modern face of e-scrap recycling in Hong Kong

# Scrapping aircons and rice cookers the ALBA way

A state-of-the-art facility and collection infrastructure are being hailed as a model for the electronics recycling industry in Hong Kong and other places that continue to face criticism for questionable environmental practices.

By Martijn Reintjes

**T**here's nothing like it in South East Asia,' asserts Nigel Mattravers, director and general manager of ALBA Integrated Waste Solutions (Hong Kong), a division of Germany's ALBA Group.

Mattravers' comment is directed at 'a flagship electronics recycling project', not only for the metropolis of Hong Kong but far beyond. 'We have had representatives from the Singapore government recently visit and see what has been accomplished here,' he says. 'I must tell you, they were impressed.'

With its annual electronic scrap volumes of more than 70 000 tonnes equating to almost 22 kg per capita, Hong Kong is Asia's biggest e-scrap generator: not only computers, fridges and TV sets but also mountains of rice cookers and discarded air-conditioners. Mattravers has the numbers: 'Some 400 000 air-conditioners are installed in Hong Kong homes and offices every year, and among these are many replacements.'

## Need for change

According to Mattravers, 80% of Hong Kong's electronic scrap is currently exported to developing countries, while 20% is dumped in local landfills. 'There is improper storage and unhealthy processing in the New Territories; sooner or later, these practices have to come to an end,' he stresses.

The modern Euro 60 million (US\$ 70 million) treatment facility, initiated and financed by the Hong Kong government and developed and managed by ALBA, is to bring the necessary change for the Special Administrative Region's 7 million-plus



Hong Kong's 7 million-plus residents will witness a dramatic change in e-scrap recycling, claims ALBA.

residents, Mattravers believes. 'In Europe, recycling is something normal, but in Hong Kong we're still learning,' he notes.

## 85% recovery rate

The e-scrap facility contract, which the Hong Kong government awarded the ALBA Group in 2015, involves not only the building of the e-scrap recycling plant but also operation of the collection and recycling system for a duration of 10 years.

The new Waste Electrical and Electronic Equipment Treatment and Recycling Facility (WEEETRF), expected to start up operations before the end of 2017, is located in the Tuen Mun EcoPark, north of Hong Kong's international airport. It will have the capacity to handle up to 30 000 tonnes of e-scrap

per year, with the potential to expand up to 57 000 tonnes. According to ALBA, the facility will boast an 85% recovery rate.

The 'latest' processing technology will be used to handle hazardous materials such as mercury, lead from cathode ray tubes (CRT) and refrigerants.

## Handling air-conditioners and CRTs

The ALBA facility has several electronics treatment lines, the one for air-conditioners being capable of dismantling up to 50 units per hour. The facility also houses a CRT monitor recycling line which will be capable of processing some 60 tubes per hour while an LCD monitor line will cope with the same number.



**Nigel Mattravers: 'There's nothing like it in South East Asia.'**

In addition, ALBA Hong Kong has the capacity to dismantle and recycle 31 000 washing machines, 200 000 TV sets and 27 000 refrigerators per year. These WEEE handling lines alone have cost almost Euro 12 million (around US\$ 14 million) and were designed and installed by German recycling technology provider Erdwich. Erdwich claims the ALBA Hong Kong contract to be their biggest to date.

The facility also comprises a refurbishment division where used computers, laptops and televisions will be repaired and given a second life. The huge plant has a workers' rest area garden as well as several public viewing galleries, one of which is at the processing hall.

### A take-back model

Apart from the main treatment facility at Tuen Mun, ALBA has set up five regional collection centres to sort, store and record the e-scrap, as well as eight satellite centres for collections only. The collection centres are located on Hong Kong Island, in Kowloon and in the New Territories.

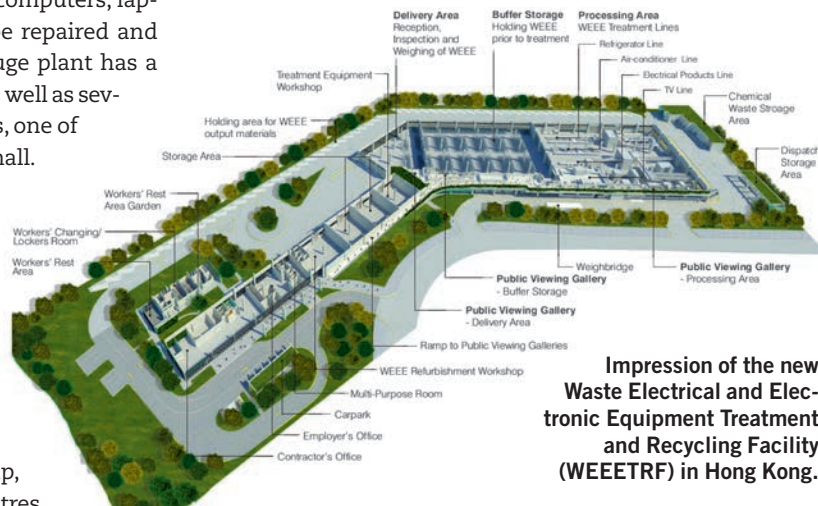
To date, some 1600 retailers in Hong Kong have become involved in the collec-

## ALBA's stepping stone to mainland China

ALBA's e-scrap facility in Hong Kong is widely regarded as a pilot project to prepare the way for future recycling developments across Asia. Indeed, the German recycling major is continuing to expand its activities within China, having agreed to build a high-tech recycling park with its Chinese partners Chengdu Techcent Environment Co Ltd and Deyang Construction Investment Co. The 3.3-square-kilometre Deyang Resource Recycling Industrial Park is to be built south east of the city of Deyang in China's Sichuan province. According to ALBA, the park's concept caters for 'all types of waste

and all treatment and recycling steps' in one place using state-of-the-art equipment. It is claimed the park will become 'a model' in China for testing sustainable waste management and recycling concepts for use in the country's mega cities. Some Euro 1 billion (approaching US\$ 1.2 billion) will be invested in the project.

'China is very interested in rapid progress in terms of environmental protection,' comments ALBA's ceo Dr Axel Schweitzer. 'We want to develop these kinds of high-tech recycling parks, like the one planned now, in various Chinese regions.'



**Impression of the new Waste Electrical and Electronic Equipment Treatment and Recycling Facility (WEEETRF) in Hong Kong.**

### Not an easy job

The project has not been without its difficulties. Construction and completion of the facility have been subject to serious delays resulting from problems with permits and non-availability of electricity, Recycling International has learned from insiders.

Last May, indeed, engineers from shredding systems specialist Erdwich were unable to finish their work at the e-scrap recycling line and were sent back to Germany to await reconnection of the plant to the electricity supply, confirmed the company's managing director Hans Erdwich. ■

tion system. Apart from helping businesses or NGOs to take advantage of take-back services, members of the public can also drop off e-waste directly at the collection centres.

finish their work at the e-scrap recycling line and were sent back to Germany to await reconnection of the plant to the electricity supply, confirmed the company's managing director Hans Erdwich. ■



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# Axion: Marker technology 'not the answer' to increasing recycling rates

New developments in marker technology for sorting plastics packaging should not be viewed as the answer to increasing recycling rates. However, they could prove valuable in other ways, leading to higher quality and value in recycling, it is suggested by Axion Consulting.



Methods to detect different polymer types - such as use of fluorescent pigments and digital watermarks - offer exciting potential. However, they should be viewed as a means to safeguard recyclate quality rather than as the solution to boosting recycling rates, asserts Richard McKinlay, head of engineering & research at resource recovery specialist Axion Consulting, which is part of the UK-based Axion Group.

Meanwhile, near infrared (NIR) technology still has much 'unexploited potential' in terms of recovering more packaging such as polypropylene (PP) from rigid plastics, polyethylene and PP films, he suggests.

According to Axion, diversification in the plastics packaging market is leaving the established infrastructure behind. 'NIR technology detects polymer type, which

for many years was sufficient to recover high-quality PET, HDPE, LDPE film and PP - but this is changing,' it observes.

## Need for an alternative

Innovation in packaging has led to a more complex waste stream that contains many different components: for example, shifting UHT milk from recyclable HDPE bottles into opaque PET containers has a negative effect on recycling. The growing use of PET in non-food products can lead to challenges when using recycled PET in new food packaging.

'This shift has brought forward the need for an alternative to NIR that can sort material on more criteria, to protect existing recycling processes and drive up quality to access higher value markets,' says McKinlay.

Several project teams, bringing together companies throughout the supply chain, are currently researching marker techniques that provide detailed information on what packaging can and cannot be recycled, including:

- Fluorescent pigments, which are invisible in normal lighting conditions but can be detected under ultraviolet light. Specially chosen for optimum performance while minimising cost, they are safe to use in food-contact applications.
- Digital watermarks, which are patterns that can be applied in label or packaging design, or directly to the polymer surface. Having minimal visual impact, they can be detected by a camera and created at very low cost. Each marker can hold a large amount of data, such as material composition, original contents and suitability for recycling.

The development of fluorescent pigments is significantly further advanced than digital watermarking, with some European initiatives - such as the Polymark project - already finished and others close to completion. 'There is, therefore, a better understanding of the efficacy of fluorescent pigments,' notes McKinlay. 'There are still many unknowns about watermarking and more independent studies are needed. Watermarking could be a powerful tool in the future because of how much data it can hold and brand owners can gauge how much of their packaging is recycled.'

For example, the same watermark can be used by manufacturers during produc-

## Axion starts new phase of CRM recovery project

Axion Consulting is embarking on the next phase of a major European research project into the recovery of critical raw materials (CRMs) from waste electrical and electronic equipment.

For the first half of the project, Axion has worked with three partners to run collection trials in High Street and charity stores in the north of England, involving unwanted data-bearing devices such as PCs, tablets, laptops and smartphones. The trials have

taken place in 10 stores, working with the British Heart Foundation, Currys, PC World and John Lewis. Some of the collection trials will continue until August.

'This exciting project seeks to improve understanding, not just of consumer behaviour in recycling and reusing these devices, but also how we can recover valuable materials from them in an economically viable and efficient way,' explains Axion's principal consultant Jane Gardner.

Project partners include the European Recycling Platform, the European Advanced Recycling Network, the Wuppertal Institute and the Knowledge Transfer Network.

Germany and Italy are also involved in the three-and-a-half-year sustainability project targeting an increase in recovery of rare metals from products such as consumer electronics, ICT equipment and small household appliances. Research has found that almost 40% of electrical products go to landfill.

tion, and by consumers to give product information such as nutrition or recipes. It is even possible to develop a 'smart bin' which, when shown the packaging, can tell you whether it can be recycled or not. Finally, the watermark is used by the recycler to know where to sort the material for maximum value recovery.

### Only part of the solution

This ability to share data across the value chain may be very powerful. However, according to the Axion expert, it is only part of the solution, and packaging must be fundamentally recyclable in an economic way. Therefore, compromises should not be made because of the ability to sort the different materials.

While markers offer a useful way to detect differences between food and non-food packaging, such as PET drinks bottles and PET detergent bottles, McKinlay warns that taking this route could lead to manufacturers using packaging in the future that has less value at end of life - for example, using more PET in non-food applications and reducing the subsequent quality of recyclable material.

'Although this type of technology may be a very powerful tool for information-gathering,' says McKinlay, 'it is not an answer to increasing recycling rates. In my opinion, this marker technology should be seen as a way to safeguard quality of materials for recycling. In terms of increasing recycling rates, I think it is unlikely it will have any significant impact.'

According to McKinlay, the only way to increase recycling rates is to do more sorting on more of the plastic fractions that are currently going to energy recovery because of the lack of economic viability

in recovering them. 'In order for this to happen, a fundamental change in the economic drivers for recycling is needed,' he believes.

[www.axionconsulting.co.uk](http://www.axionconsulting.co.uk)

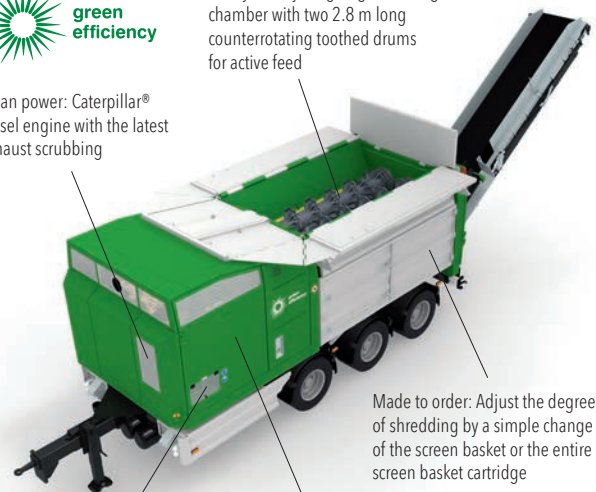
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# Data security challenges for US recyclers and refurbishers

In addition to world events shaping the US ferrous scrap market, this year's US Institute of Scrap Recycling Industries convention in New Orleans addressed another major source of growing concern: the potential recycling and refurbishment impacts of what is often described as 'the Internet of Things'.

By Megan Quinn and Rachel Pollack

Refurbishers can cash in on the resale value of some internet-capable devices, Texas-based Renew Logic's ceo Gary Stephens told the US Institute of Scrap Recycling Industries' latest convention. However, data security is a major challenge.

For example, when turning on a refurbished, internet-connected TV device for the first time, ARCOA Group president George Hinkle clicked on the Gmail icon and accidentally accessed the email account for the previous owner of the device. 'That's a problem,' he acknowledged.

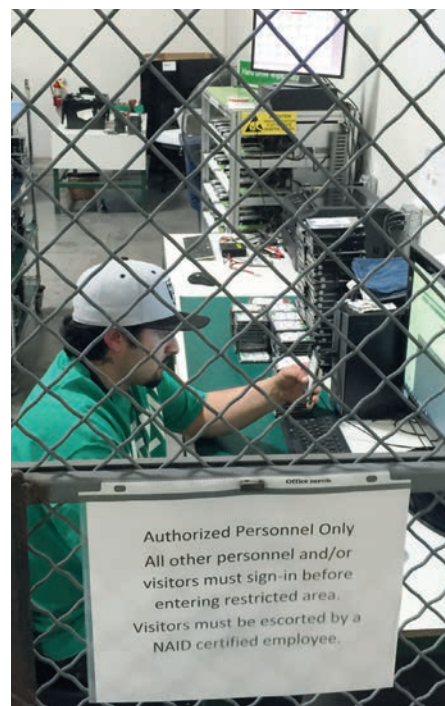
According to HOBI International's president Craig Boswell, privacy concerns can go beyond accidental email breaches. 'How about a connected car? If I really wanted information on my competitor,

I'd buy his top salesman's BMW and turn on the GPS' - the sales calls would still be listed, he said.

Recyclers and refurbishers must learn to apply data destruction techniques to less common smart devices when they inevitably reach their end-of-life phase, Stephens concluded.

## Concerns over batteries

While recyclers aim to protect people from data security breaches, they must also protect themselves and workers from battery-related dangers, Stephens argued. It can be tough for recyclers to identify a potentially harmful battery in tiny devices such as a personal fitness monitor. 'Batteries are shrinking, and recyclers are seeing more of them in the stream than ever before,' he said.



A look inside Electronics Recycling International's highly secure data destruction division in Fresno, California.

Recyclers also are concerned about the way manufacturers install batteries. Only five years ago, 'the battery just fell out' when a worker took apart a device, according to Stephens. Today, the battery might be glued, clipped or screwed in so tightly



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that extracting it might be dangerous for the worker. 'When you have to prise a battery out, you have fires,' the speaker said. Some companies have invested in sprinkler systems or specialised tools to make the job safer and easier, he added.

### 'A balancing act'

Turning the focus on the steel scrap industry, market analyst John Harris of Canada-based Aaristic Services highlighted to the ISRI gathering that steelmaking in China and India, excess iron ore mining in Brazil and Australia, Iran's direct reduced iron production and growth in Russian electric arc furnace (EAF) steelmaking capacity all affected North American steelmaking.

Turkey, the top export destination for US ferrous scrap, was performing 'a balancing act', switching between rolling mills and EAFs based on the cost of billet compared with scrap - a situation that 'affects the entire market', according to Harris.

China was still flooding the world with steel while its efforts to become a global trade partner included planned cuts to both steel exports and production capacity, explained Becky Hites, president of US consultancy Steel-Insights. China's domination of global steel production was likely to continue, she said.

Harris outlined China's success in expanding its land and sea trade routes and its rumoured development of steelmaking capacity in east Africa.

Globally, the steel industry was seeing more consolidation while economic weakness was creating a move towards trade protectionism, according to Hites. Pointing to continued global instability owing to political changes, migration and global conflicts, she said 'economies will not get back into strong growth until these things are resolved'.

### An industry 'in distress'

US steel imports have been growing as a proportion of American steel consump-

tion. More effective trade enforcement in 2016 had reversed some of that growth - but imports 'are not going away', Hites insisted. The US steel industry was still 'in distress', with capacity utilisation well below 80% for most mills. With higher utilisation rates than integrated mills, EAFs now produced more than 65% of US crude steel.

Each percentage point change in America's EAF capacity utilisation equals roughly 54 000 tonnes of ferrous scrap, according to Harris. His models showed that, at that moment, EAF steelmaking was more expensive than the basic oxygen furnace (BOF) route, while BOFs were also faster and produced steel with less copper. EAFs still needed scrap, but direct reduced iron was cutting into their scrap consumption because it helped these furnaces to create low-residual steel, he said.

Looking ahead, Harris predicted that 3-D printing of metal products on demand and several other new technologies could change the economics of steelmaking. ■



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By Kirstin Linnenkoper

Some 40% of glass bottles and jars are recycled in the USA each year, according to figures from the US Environmental Protection Agency. Glass makes up roughly 5% of the total waste stream but, despite the material's well-known recyclability, an estimated 28 billion bottles and jars are consigned to landfill on an annual basis.

'Even with today's recycling programmes, billions of glass bottles end up in landfills every year,' confirm researchers at the University of California. However, they have recently made an exciting discovery: the silicon dioxide present in post-consumer beverage bottles can provide high-purity silicon nanoparticles for use in lithium-ion batteries.

## Three-step chemical reaction

A single glass bottle provides enough nanosilicon for hundreds of coin cell batteries or three to five pouch cell batteries, according to Professor Cengiz Ozkan, who co-led the University of California project.

His team created battery anodes using a 'three-step, low-cost chemical reaction process', he explains. This involves: crushing and grinding the glass bottles into a fine white powder; magnesiothermic reduction to transform the silicon dioxide into nanostructured silicon; and coating of the silicon nanoparticles with carbon to improve their stability and energy storage properties.

The dried glass powder and silicon powder is 'ultrasonicated' for two hours, followed by stirring for three hours. The mixture is then left to dry overnight at 105 degC in a vacuum oven to remove any water.

Compared with quartz derived from natural substances, the resultant glass powder is used directly as an SiO<sub>2</sub> precursor without a leaching and annealing process. This 'simple and straight route' to achieving relatively high-purity SiO<sub>2</sub> supports large-scale production, the researchers maintain.

## More power, fewer charges

Regular silicon anodes can store up to 10 times more energy than conventional graphite anodes but expansion and shrinkage during charge and discharge make them 'unstable', the researchers point out. Downsizing silicon to the nanoscale has the ability to greatly reduce this issue.

Coin cell batteries made using glass bottle-based silicon anodes 'greatly outperformed' tra-



# Used glass bottles could crack the battery market

While plastic bottles have become the packaging of choice for soft drinks producers, glass is used to bottle virtually all wines and spirits. Glass recycling has been an established practice for very many years; however, it now seems that glass could also become a game-changer for the batteries of the future.

ditional batteries in laboratory tests, Ozkan notes. They are said to be significantly more stable and can store almost four times more energy than conventional graphite anodes. Carbon-coated glass derived-silicon electrodes have demonstrated 'excellent' electrochemical performance with a capacity of ~1420 mAh/g at C/2 rate after 400 cycles.

'The existence of carbon in reduced silicon may increase the network conductivity for battery applications,' the researchers conclude.

This patent-pending breakthrough relating to next-generation lithium-ion batteries has the scope to extend the range of electric vehicles and plug-in hybrid electric vehicles. The innovation also caters to the growing personal electronics market given that it provides more power with fewer charges to laptops, tablets, smartphones and other consumer gadgets. ■

For more information, contact Professor Cengiz Ozkan at: [cozkan@engr.ucr.edu](mailto:cozkan@engr.ucr.edu)

If you know of an innovative recycling-related project, contact: [kirstin@recyclinginternational.com](mailto:kirstin@recyclinginternational.com)



# Prices head north on solid demand

This time last year, HMS and shredded exports to Turkey were attracting little more than US\$ 200 per tonne; fast forward to early August 2017 and prices are around US\$ 100 higher - and continuing to gain ground. Latest cfr price indications for shipments from Europe to Turkey are US\$ 320-325 per tonne for standard quality HMS I/II 80/20 scrap and US\$ 325-330 for shredded.

**By Ian Martin**

**F**rom a mid-June starting point of approaching US\$ 285 per tonne cfr for shredded scrap heading into Turkey from the USA and the Baltic Sea, the early days of July saw prices break through the US\$ 300 barrier on the back of healthy Turkish demand for rebar and mills' relatively low raw material inventories.

Two buying spurts in the first half of July consolidated ferrous scrap export prices

around the US\$ 300 level, with upwards of 20 bookings made during the period. Upward momentum was renewed at the start of the second half of July as US cargoes fetched more than US\$ 310 per tonne both for the HMS I/II 80/20 mix and for shredded, with Baltic Sea supplies into the Turkish market trailing a little way behind. Late in the month, however, US and Baltic Sea consignments of these grades were commanding well over US\$ 320 per tonne on a cfr basis, rising beyond US\$ 330 for

shredded at the time of writing in early August.

Unlike in Turkey, steel demand has been weak in Taiwan but prices paid for imported scrap have been on a generally rising curve in line with the strength of the international market. HMS I/II 80/20 was reportedly bought from the USA at upwards of US\$ 275 per tonne cfr in late July, as against around US\$ 250 in mid-June. The Indian market has largely turned its back on these higher international prices whereas an increased



## China exports scrap, South Korea steps up imports

China exported 96 400 tonnes of steel scrap in the opening five months of this year - with the biggest buyers being Hong Kong on 27 523 tonnes, Indonesia on 21 110 tonnes and Taiwan on 20 133 tonnes, according to the latest steel recycling figures compiled by the BIR ferrous division's statistics advisor Rolf Willeke. This unusual outward flow of scrap from China has been attributed to Beijing's programme targeting domestic induction furnace closures. The statistics also confirm Turkey as the world's leading steel scrap

importer in the opening quarter of 2017 (+2.6% year on year to 4.26 million tonnes). However, South Korea replaced India as the world's second-largest buyer of foreign steel scrap, upping its order by 28.2% year on year to 1.601 million tonnes whereas India slashed its imports by 39.3% to 1.186 million tonnes. Also in the first quarter of 2017, the EU-28 retained its position as the world's leading steel scrap exporter with shipments of 5.053 million tonnes - an increase of 30.6% over the first three months of 2016.

number of bulk cargoes have been booked over the last couple of months by Pakistan and Bangladesh.

### Turkey's imports up 11%

US ferrous scrap exports to all destinations neared 5 million tonnes in the opening five months of 2017 - outstripping overseas shipments in the same period last year by approaching 750 000 tonnes, according to latest US Census Bureau and International Trade Commission statistics.

But while the January-May 2017 export total of 4.965 million tonnes was 17.7% ahead of last year, deliveries to leading market Turkey slumped 23.8% from 1.358 million tonnes to 1.035 million tonnes. India and South Korea also cut their US scrap requirements, the former by 47.8% to 295 094 tonnes and the latter by 35.9% to 218 024 tonnes.

These declines were more than repaired, however, by substantially increased US exports to other leading outlets, most notably Mexico (+65.1% to 685 252 tonnes), Taiwan (+45.6% to 604 369 tonnes) and China (+313.8% to 346 687 tonnes). US ferrous scrap shipments to neighbouring Canada shot up 110.8% year on year to 277

162 tonnes whereas the increase in consignments to Vietnam was an eye-catching 724.8% to 292 738 tonnes.

Latest import figures, meanwhile, show that Turkey's year-on-year increase in May of approaching 24% to 2.1 million tonnes contributed to a five-month total of 8.03 million tonnes - equivalent to a hike of more than 11% over January-May 2016. As for China, its ferrous scrap imports climbed 7.6% year on year in June to 185 271 tonnes, with Japan supplying upwards of 90% of the total with 164 732 tonnes.

### Competing commodities

Iron ore prices gained significant ground in the latter days of the first half of this year, with the Metal Bulletin 62% Fe index climbing from around US\$ 55 per tonne in mid-June to nearer US\$ 65 around the month's end. Following sev-

eral weeks of a price plateau, the index pushed beyond US\$ 70 per tonne shortly after the mid-point of July before dipping back below this threshold.

As the month drew to a close, the US\$ 70 per tonne barrier was breached once again, with the index rising towards US\$ 74 before edging a couple of dollars lower.

China's iron ore imports were not far short of record levels in June this year. The 94.7 million tonnes entering the country during the course of the month took the running total for the first half of the year to a shade under 540 million tonnes - an increase of 9.3% over the corresponding period of 2016.

Iron ore output within China also climbed more than 9% in the first half of 2017, approaching 125 million tonnes in June itself and 637 million tonnes for the six-month period as a whole, according to the National Bureau of Statistics. >

## Steel

China's crude steel output soared to a new peak in June, according to latest statistics published by the World Steel Association (WSA). The country's mills produced 73.231 million tonnes during the course of the month, outstripping the previous high of 72.777 million tonnes set in April this year.

As a result, China's steel production in the opening half of 2017 was 4.6% or some 18.5 million tonnes higher than in the same period last year at 419.745 million tonnes. The year-on-year increase was similar to the worldwide output gain for the January-June period, with WSA figures

showing a crude steel production increase across its 67 reporting countries of 4.5% to 836.026 million tonnes.

Although world steel production climbed 3.2% year on year in June to 141.046 million tonnes, Russia (-8%), Ukraine (-13%), Japan (-4.3%), the USA (-1.7%) and India (-1.1%) all made cuts to their output when compared to the same month last year. Across the first half of the year as a whole, however, Ukraine was alone among the world's leading steel producers in posting a lower output total compared to January-June last year (-15.4% to 10.504 million tonnes) whereas year-on-year gains were recorded by Turkey (+11.4% to 18.215 million tonnes), India (+5.3% to

49.482 million tonnes), South Korea (+3.7% to 34.699 million tonnes), the USA (+1.3% to 40.591 million tonnes), Russia (+0.8% to 35.34 million tonnes) and Japan (+0.5% to 52.305 million tonnes).

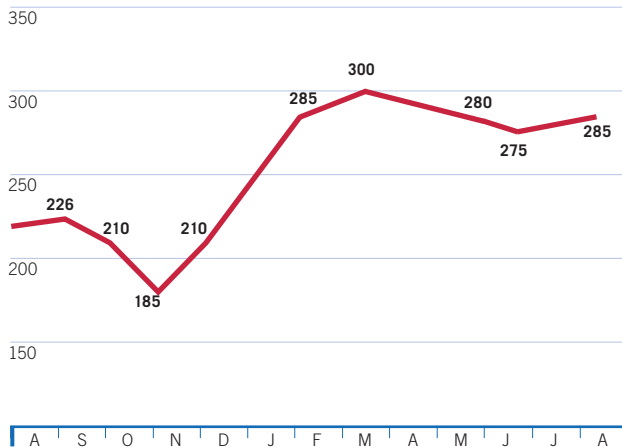
From the more regional perspective, EU-28 crude steel production was 4.1% higher in this year's first half at 86.129 million tonnes while Oceania reported a gain of 5% to 2.876 million tonnes when compared to the opening six months of last year. Even more substantial output hikes were registered by South America (+10.6% to 21.231 million tonnes), Africa (+11% to 6.678 million tonnes) and the Middle East (+9.4% to 15.493 million tonnes).

## Ferrous Scrap Prices

Reference date: August 9, 2017

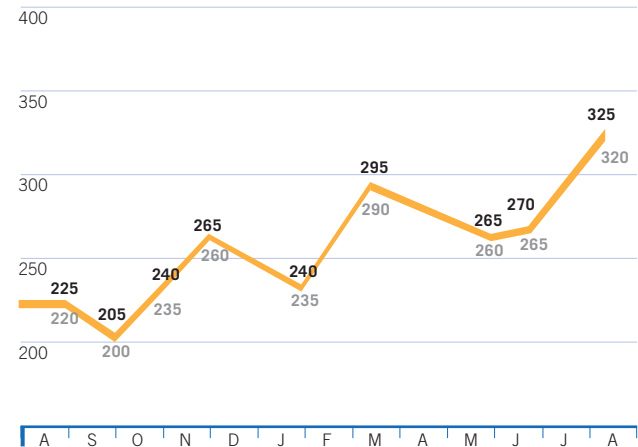
### USA Domestic Scrap Prices\* (US\$/GRT)

HMS 1 heavy steel scrap (1/4 Inch) composite price delivered at mills



### CFR Prices for shipments from EU to Turkey (US\$/t)

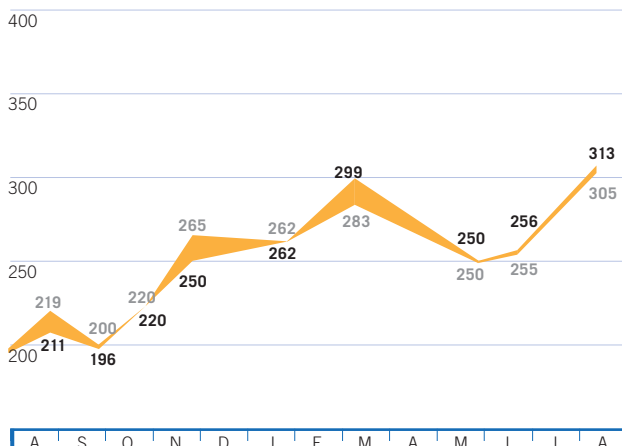
HMS 80/20 heavy steel scrap



### USA Export Prices\* (US\$/GRT)

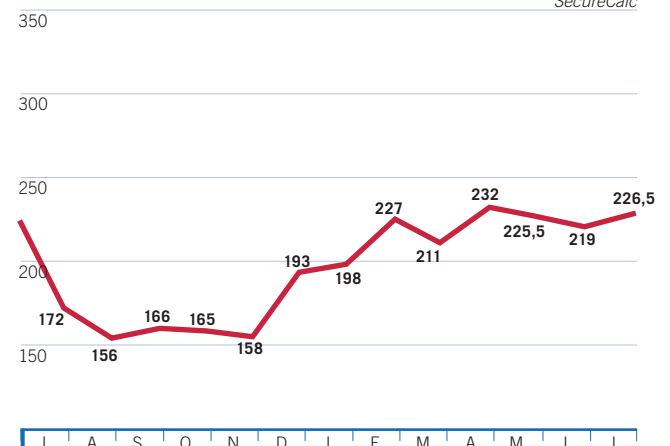
HMS 1, heavy steel scrap (1/4 Inch)

— Fob East Coast price  
— Fob West Coast price



### Composite Sales Price ex Yard in Germany\*\* (€/t)

E3/European Standard Quality No. 3, heavy old steel scrap (>6mm) Source: BDSV/SecureCalc



\* Courtesy MetalPrices.com. Copyright (c) 2016 Argus Media Inc

\*\* Composite sales price considers sales to domestic and international steel works and foundries on weighted average basis

## Steel imports still a concern despite 'mild' EU consumption growth

Having grown 3.1% year on year in the first quarter of 2017, initial data and estimates for the second quarter indicate EU apparent steel consumption 'remained on a mildly positive growth trend'. However, a relatively sharp rise in imports during April and May suggests the region's mills 'most likely again lost ground to third-country suppliers', laments Axel Eggert, director general of European steel association Eurofer.

The EU's apparent steel consumption is forecast to continue its improvement during the remainder of 2017, with Eurofer forecasting an increase of 1.9% for the year as a whole. In 2018, steel demand growth 'is expected to moderate, on a par with the mild slowdown in real consumption growth'.

'Import distortions will remain the main risk for the stability of the EU steel market,' Eggert asserts. 'With no structural solutions for the underlying problem of global overcapacity in sight, the number of protectionist and even isolationist measures looks set to increase.' He expresses particular concern that measures potentially stemming from the US Section 232 investigation 'may lead to a proliferation of disastrous global trade flow distortions'.

Healthy export opportunities and strengthening domestic demand fundamentals owing to a minor acceleration in investment growth are likely to boost activity in the EU's steel-using sectors, with Eurofer projecting that their total output will grow by 3.5% this year and by 2.1% in 2018.

Crude steel capacity utilisation across the 67 countries reporting to the WSA was 73% in June this year - 1.4 percentage points higher than in June 2016 and 1.3 percentage points ahead of May 2017.

### Policy solutions promised

China trimmed 42.39 million tonnes from its annual crude steel capacity in

the first five months of 2017, the country's National Development & Reform Commission announced in June. The effect has been not only a tightening of steel supply within China at a time of decent demand but also a reduction in the volumes of finished product finding their way into the export channel. The country's exports tumbled more than 28% in the first half of 2017 to 41 million tonnes from more than

57 million tonnes in January-June 2016, according to Chinese customs data.

Steelmakers around the world have expressed some relief at this reduced flow but, at the same time, have emphasised that China does not represent the only overseas threat to their sales. In its latest results statement, for example, Nucor insisted imports were continuing to negatively impact the US steel industry and mentioned ongoing cases against Japan, Turkey and Taiwan over alleged unfair trading. Through the first half of 2017, said Nucor, finished steel imports jumped some 15% from the same period last year and accounted for an estimated 27% share of the US market.

As a footnote, the G20 group of developed nations has confirmed its intention to announce policy solutions by November to tackle global steel overcapacity.

The drop in export flows from China is hailed as one reason for more robust capacity utilisation rates in the USA, Europe and elsewhere, creating generally decent market conditions for scrap processors.

### Outlook

Prices for finished steel and for scrap have been increasing in parallel, and there are no immediate signs of a significant change in this market environment. Among the expert contributions to the latest ferrous metals Mirror publication from the BIR world recycling organisation, the talk is of further market improvement and cautious optimism for the remainder of the year. ■

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## Scrap prices show restraint

Scrap prices have headed significantly higher since our previous report in mid-June, but the increases do not fully reflect the scale of the gains made by LME nickel. The 304 and 316 scrap qualities have advanced to, respectively, US\$ 1200-1250 and US\$ 1600-1650 per tonne while chrome scrap values have climbed to US\$ 310-350 for the 409 grade and US\$ 380-420 for 430 material.

### By Gerhard Teborg et al

**A**lthough nickel prices have surged to US\$ 10 300 per tonne, there has been a restrained reaction from stainless steel scrap prices owing to cautious behaviour within the marketplace. Volumes of scrap available from traders are still low and demand from stainless steel mills remains sluggish.

For the 304 scrap quality, the price range has climbed from US\$ 1060-1110 per tonne in mid-June to US\$ 1200-1250 while 316 material has posted a gain from US\$ 1460-1510 to US\$ 1600-1650 over the same period. Chrome scrap values have profited from higher steel scrap prices and have advanced from US\$ 270-310 per tonne to US\$ 310-350 for the 409 grade, and from US\$ 360-400 to US\$ 380-420 for 430 material. This is despite official charge chrome prices falling to US\$ 1.10 per lb for the third quarter.

### Favourable economic news

Since our previous report in mid-June, nickel prices made further progress to US\$

9400 per tonne after having broken back through the US\$ 9000 barrier. But prices then came under pressure as market participants became increasingly concerned about the prospects of Indonesia approving more nickel ore export quotas and of the Philippines reversing its previous mining clampdown decisions. However, short covering prompted a recovery to US\$ 9530 per tonne amid a weaker US dollar, positive chart patterns and stronger steel rebar prices in China.

The weaker dollar and favourable economic news helped to underpin the nickel market, helping the metal to rally strongly to US\$ 10 115 per tonne - an increase of 15.7% from the lows seen at the beginning of June. However, the increase has yet to prove itself sustainable and has barely made a dent in the losses suffered by nickel since 2014. As a result, the recovery may be 'too little too late' for some in the industry.

According to the International Nickel Study Group, production of the metal totalled 834 600 tonnes in the first five months of 2017 while consumption reached 862 400 tonnes, implying a deficit of 27 800 tonnes.

### Developments in chrome

As already mentioned, South African producers have sharply reduced their third quarter benchmark price for charge chrome to US\$ 1.10 per lb Cr content - a reduction of 29.5% from the previous quarter. According to Roskill Pariser Alloy Metals & Steel Market Research, South Africa's ferro-chrome exports increased by 6.9% month on month in April; some 302 600 tonnes was exported in total, with 25% going to China. South African production of charge chrome was broadly flat at 332 000 tonnes in March and 334 000 tonnes in April. Production across the first four months of 2017 amounted to 1.302 million tonnes for a year-on-year drop of 2.1%.

EU-28 charge/HC ferro-chrome imports of 94 000 tonnes in April were 2.2% lower than in March. Compared to the same period in 2016, imports fell by 19.5%.

According to Roskill Pariser, EU-28 stainless steel scrap imports from third countries soared 27.5% year on year to 99 997 tonnes in the first quarter of 2017; Turkey claimed the largest market share with 23 507 tonnes, followed by Russia with 22 760 tonnes. EU-28 stainless steel exports amounted to 63 599 tonnes in this year's first quarter, with 33 071 tonnes exported to India and 15 496 tonnes to Taiwan.

### Europe

Nickel has followed the generally upward price trend established lately by the LME; at the same time, stocks of the metal in the LME's licensed warehouses have declined over the reporting period from 385 000 tonnes to nearer 376 000 tonnes. According to traders, nickel demand has remained rather weak as many consumers appear fearful of committing to larger quantities at current price levels.

In Germany, nickel cathodes have been trading recently at around US\$ 8625 per tonne. V2A and V4A scrap have been attracting, respectively, some US\$ 1206 and US\$ 1532 per tonne while INOX 18/8 nickel scrap has made significant gains to around US\$ 1153. As for 316 nickel scrap, this has been fetching some US\$ 1474 per tonne.

### China and elsewhere in Asia

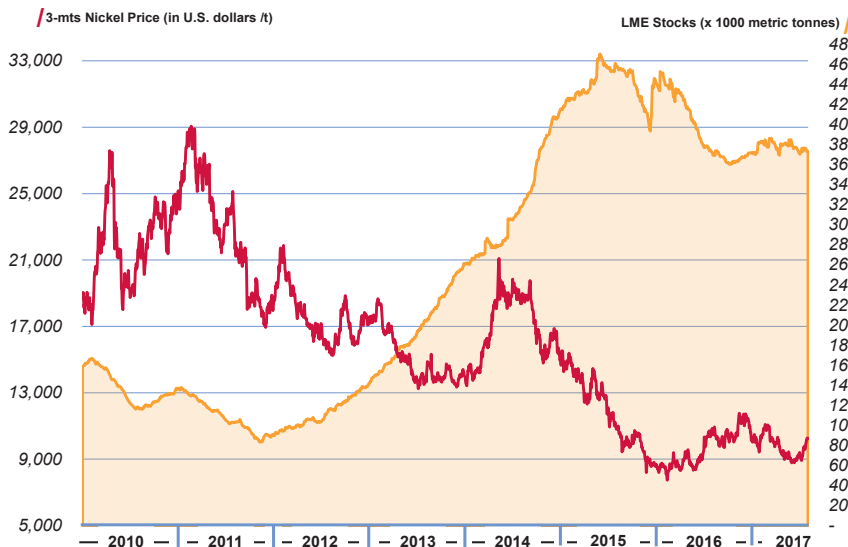
Stainless steel prices in China have received some support over recent weeks

Reference date: August 5, 2017

**China's nickel demand is strengthening:** As predicted in the previous issue, stainless steel destocking in China came to an end in late July while stainless steel production rates increased. This has pushed the nickel price over the psychologically important level of US\$ 10 000/t. If nickel prices stay at that level, nickel supply will be more than sufficient to meet global demand in Q4.



## Nickel



## Minor metals

LME cobalt prices have weakened of late to US\$ 57 200-57 250 per tonne - still a high level as the metal remains a focus for electric car producers. Among the other ferro alloy prices, there has been some drift between official quotations published by Metal Bulletin and what many see as realistic market prices. The following shows market levels with the MB quotations in brackets: ferro-molybdenum US\$ 16.60 per kg Mo (US\$ 19.80); ferro-vanadium US\$ 33.80 per kg V (US\$ 38.75); ferro-tungsten US\$ 23.80 per kg W (US\$ 27.50); and ferro-titanium of maximum 4.5% aluminium US\$ 4.50 per kg Ti (also US\$ 4.50).

from talk of a potential drop-off in supply. Towards the end of July, a sharp fall in stainless prices was quickly recovered.

Metal Bulletin reports from its recent Asian Stainless Steel conference in Hong Kong that most mill operators in China are anticipating stainless steel prices will remain under pressure in the third quarter but could reboot in the final three months of the year. The country's crude stainless steel output is expected to climb as much as 10% this year on public construction

projects and relatively low raw material prices, the conference was told by Li Qiang of the China National Association of Metal Material Trade.

## North America

US stainless steel prices dropped in July to their low point for the year to date as surcharges responded to declining raw material values. Margins for stainless steel scrap processors remain under pressure.

Outokumpu is expecting a continuation of healthy underlying demand for stainless steel, according to ceo Roeland Baan. In releasing its latest financial results, however, the producer's prediction for the third quarter is that stainless steel deliveries in the Americas will 'remain relatively flat compared to the second quarter'. It also identifies market pressure towards decreasing base prices in both the USA and Europe. ■

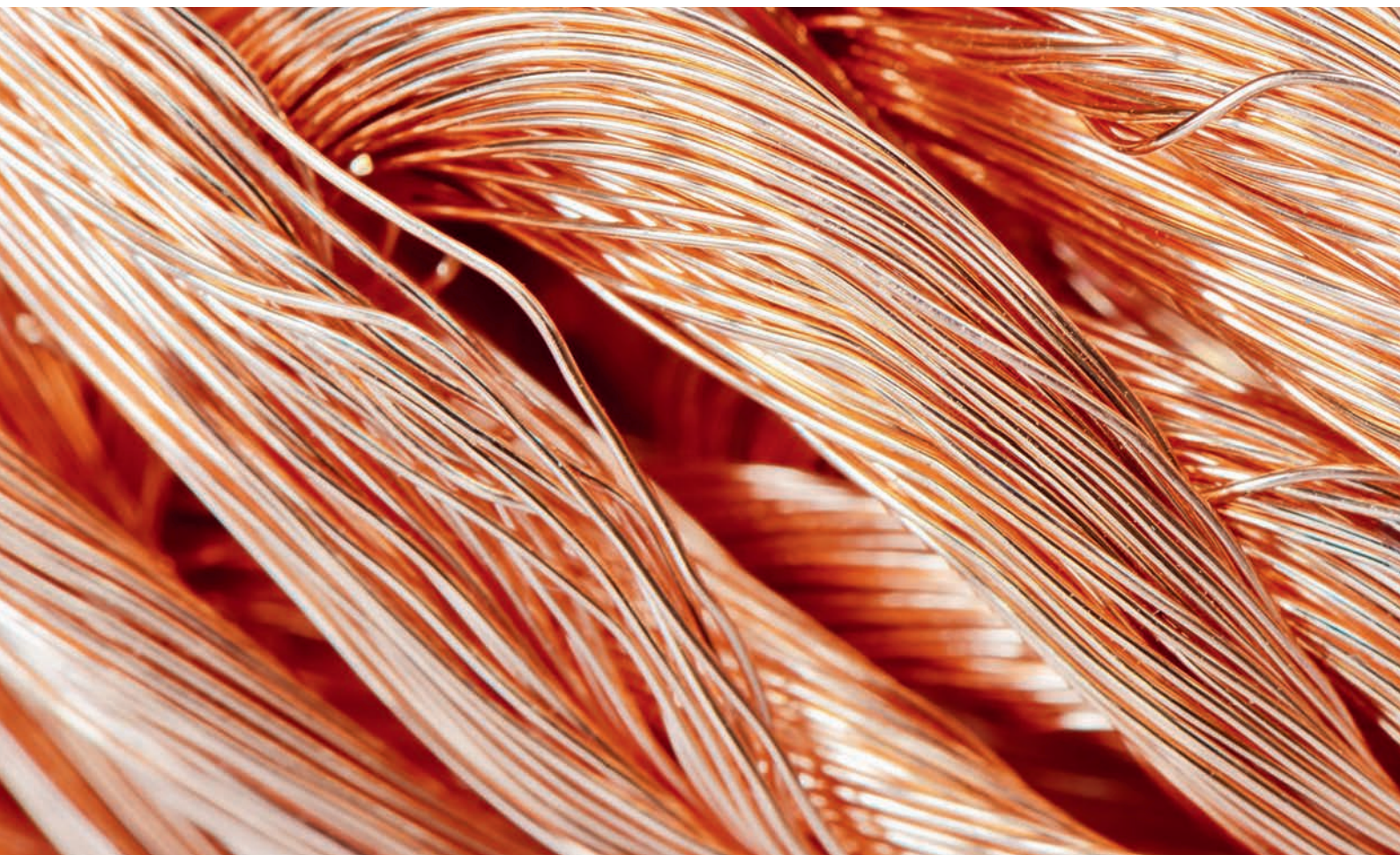
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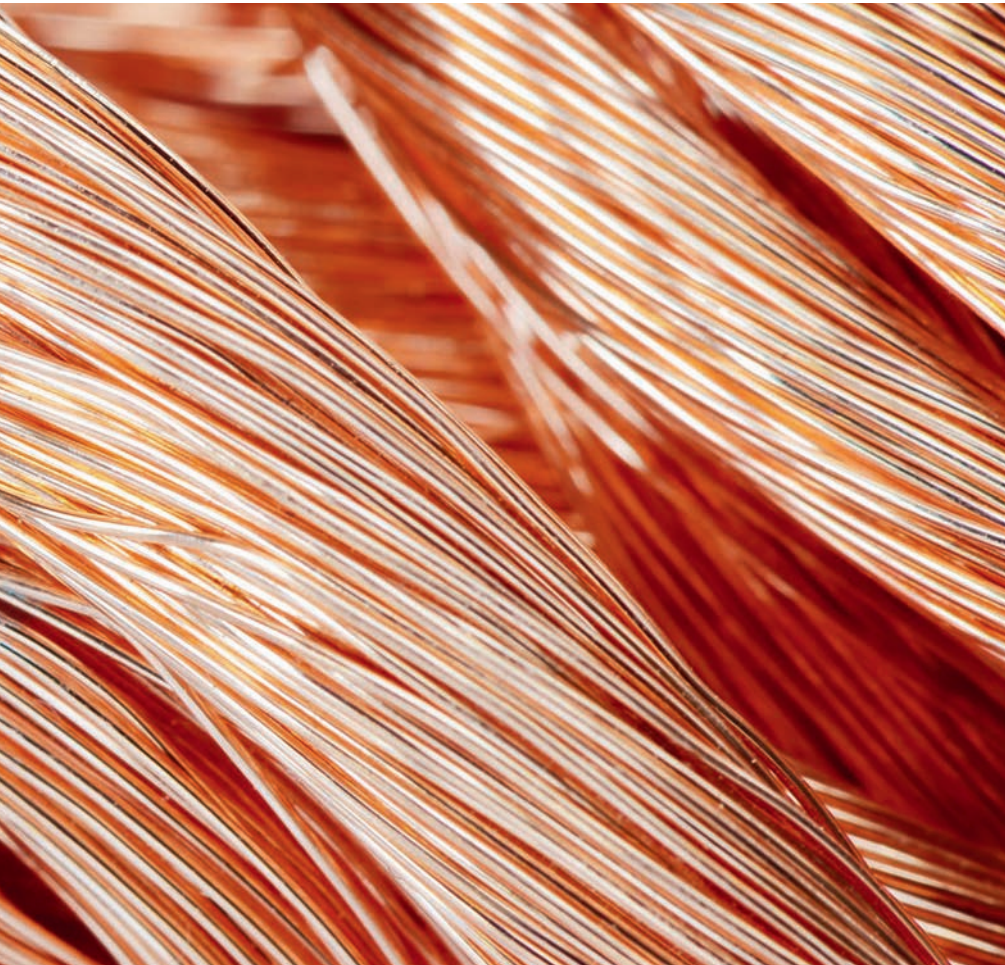
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# Analysts back copper to stay above US\$ 6000

Non-ferrous metals prices have been maintaining satisfactory levels despite the decline in manufacturing and scrap purchasing activity that usually accompanies the summer months in the northern hemisphere. The latest survey conducted by the VDM non-ferrous trade association in Germany indicates expectations among businesses that scrap will become scarcer during the remainder of the year. LME cash prices are at the following per-tonne levels (the corresponding figures from our non-ferrous metals report in mid-June are given in brackets): aluminium US\$ 1904 (US\$ 1877); copper US\$ 6347 (US\$ 5659); lead US\$ 2312 (US\$ 2036); zinc US\$ 2802 (US\$ 2436); and tin US\$ 20 930 (US\$ 19 250).





The opening five months of this year brought an almost 13% increase in US aluminium scrap exports. Overseas shipments jumped from 540 239 tonnes in January-May 2016 to 609 148 tonnes in this year's corresponding period, according to latest figures from the US Census Bureau and US International Trade Commission.

The overall increase to all destinations was mirrored by the spike in Chinese purchases of US aluminium scrap, with the Asian giant upping its order by 13.7% in the first five months of this year to 322 415 tonnes from 283 543 tonnes in January-May 2016. Shipments from the USA to Hong Kong surged 83.8% to 30 066 tonnes.


South Korea was another major market for US aluminium scrap, boosting its requirements by 31.9% year on year to 71 626 tonnes. Mexico and India also increased their purchases - the former by 12.2% to 59 122 tonnes and the latter by 29.2% to 26 546 tonnes. In contrast, volumes heading north into Canada edged 5.1% lower to 45 744 tonnes.

Norsk Hydro's president and ceo Svein Richard Brandtzæg has pointed to an increasing primary aluminium deficit outside of China and reiterated his company's forecast of 4-6% demand growth for the light metal in 2017. Using CRU estimates, Russian giant Rusal indicates that global aluminium demand excluding China jumped 3.5% in the first half of this year to 14.7 million tonnes whereas production climbed only 2.3% to 13.5 million tonnes. For the world as a whole, Rusal estimates aluminium demand growth of 5.7% to 31.7 million tonnes in the opening half of 2017 and global supply of 31.8 million tonnes,


## Aluminium

In Germany, the price of aluminium wire scrap (Achse) has improved slightly to around US\$ 1958 per tonne while aluminium turnings (Autor) have been valued recently at some US\$ 1247. On the UK market, commercial pure cuttings have been

fetching US\$ 1433-1524 per tonne, loose old rolled cuttings US\$ 1094-1159 and commercial cuttings US\$ 900-950. In the Netherlands, meanwhile, prices for new pure aluminium scrap have edged lower to around US\$ 1641 per tonne whereas first-quality old rolled aluminium scrap has made some forward progress to US\$ 1119 per tonne.



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thus leaving the aluminium market 'roughly balanced'.

## Copper

Levels of business on the copper markets are on the low side at present but the red metal's price has succeeded in pushing well beyond the US\$ 6000 per tonne mark; the three-month copper price hit US\$ 6430 as July drew to a close, and market analysts are expecting such levels to be maintained over the coming weeks, with some of them even forecasting a further increase up to US\$ 6500. Premiums have remained unchanged, however, at between US\$ 30 and US\$ 50 per ton of copper cathode on a cif Rotterdam basis.

In Germany, prices of bright wire scrap (Kabul) have increased by around US\$ 450 per tonne to some US\$ 6107 of late and copper granules 1a (Kasus) have been attracting nearer US\$ 6159 while non-alloyed bright wire scrap (Kader) has been valued at around US\$ 5955. On the Dutch market, bright wire scrap has been commanding some US\$ 6013 per tonne and mixed scrap US\$ 5255.

US copper scrap exports soared 13% to approaching 465 000 short tons in the first five months of 2017, according to Commerce Department figures.

Although world refined copper production is estimated to have remained essentially unchanged across the first four months of 2017, secondary produc-

tion from scrap leapt 12% from 1.216 million tonnes in January-April 2016 to 1.364 million tonnes in the same period of this year, according to the International Copper Study Group (ICSG). 'Increased availability of scrap allowed world secondary refined production to increase, notably in China,' the organisation states.

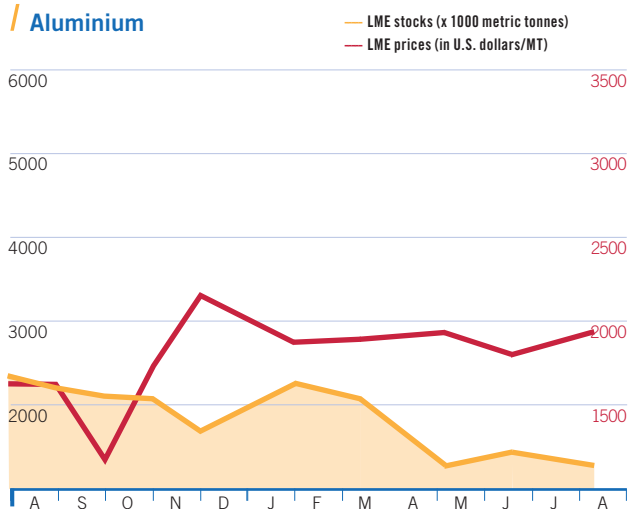
This upsurge compensated for a year-on-year drop in primary refined copper production of 2% to 6.305 million tonnes.

From the regional perspective, refined output is calculated to have increased by 4% in Asia, 3% in Africa and 2% in Europe whereas declines of 10% and 11% are estimated for, respectively, the Americas and Oceania. Globally, apparent refined copper usage is believed to have slid around 3%

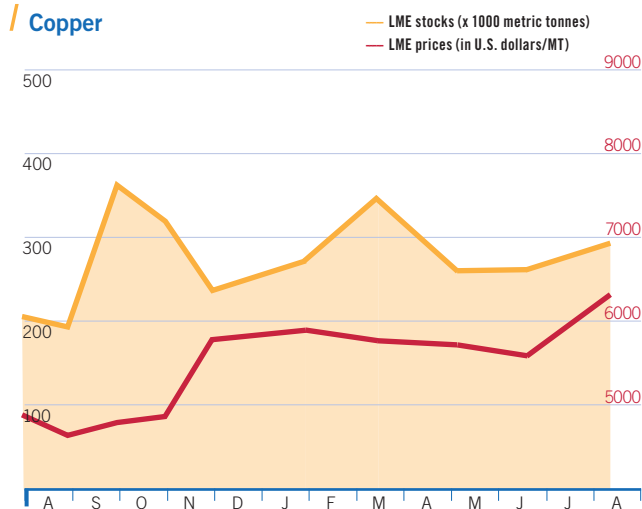
## LME Non-Ferrous Prices & Stocks

Reference date: 9 August, 2017

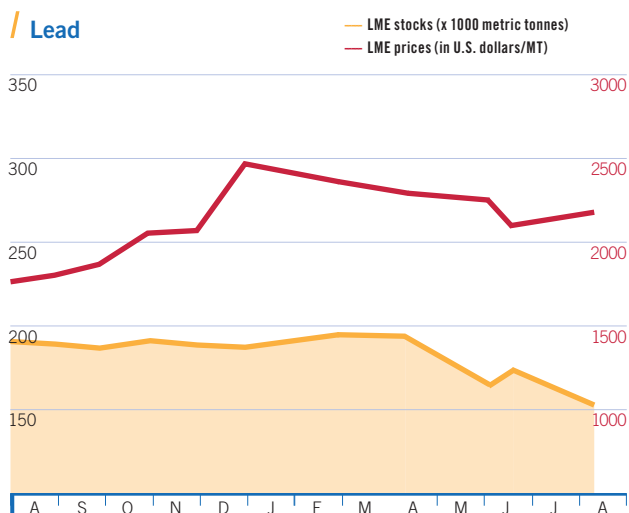
### Aluminium



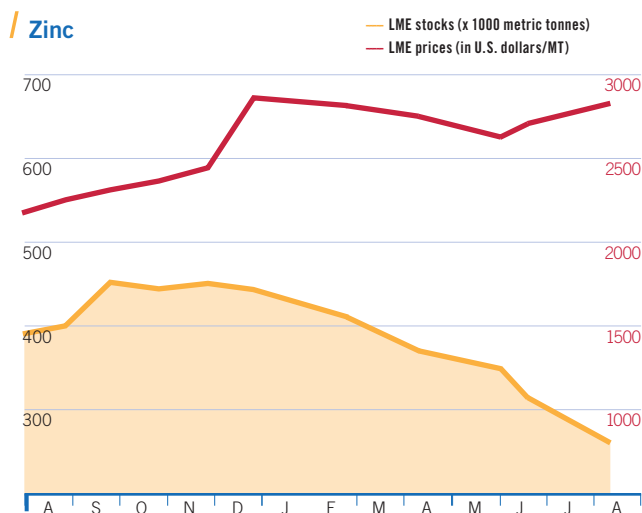
### Copper



### Lead



### Zinc



in the first four months of 2017 to 7.589 million tonnes. 'Although world ex-China usage might have grown slightly by around 0.5%, growth was more than offset by a 7% decline in Chinese apparent demand,' notes the ICSG.

These figures imply a world refined copper market surplus of around 80 000 tonnes for the opening four months of 2017 compared to a deficit of 185 000 tonnes in last year's corresponding period.

Looking to the future, the strong emergence of electric vehicles will have massive, positive implications for copper demand, according to a report compiled by IDTechEx and commissioned by the International Copper Association. Copper demand for electric cars and buses is expected to leap from 185 000 tonnes this year to 1.74 million tonnes by the year 2027. Electric vehicles use a substantial amount of copper in their batteries and in the windings and copper rotors used in electric motors. A single car can contain up to six kilometres of copper wiring.

## Lead

Developments in the lead market have been extremely positive of late, with LME prices heading beyond US\$ 2300 per tonne. In Europe, new soft lead has also traded at the significantly higher level of US\$ 2511 per tonne. Soft lead scrap prices have gained more than US\$ 200 per tonne since our previous report to some US\$ 2121 while old lead scrap is currently fetching around US\$ 2000 as against US\$ 1750 in early June. Meanwhile, used battery prices have remained firm in the USA, supported by the tightness of summer supply.

One of the reasons behind lead price gains is the growing deficit on international markets. A global refined lead market surplus of 45 000 tonnes for January-May 2016 was turned into a deficit of 91 000 tonnes in the opening five months of the current year. Although output jumped 7.2% to 4.882 million tonnes, this performance was eclipsed by the 10.3% surge in apparent usage - from 4.509 million tonnes in the first five months of 2016 to 4.973 million tonnes in this year's corresponding period, confirms the International Lead & Zinc Study Group. China's apparent usage soared 13.7% year on year.

Worldwide, the refined lead market is on course for a deficit of 7000 tonnes across

the current year as compared to a small surplus in 2016, says BMI Research.

## Zinc

Higher zinc quotations have persuaded many processors to remain cautious and to order only those volumes sufficient to meet immediate production demands. Caution within the zinc market is also being stoked by the view of some analysts that price corrections are not out of the question. Zinc stocks in LME warehouses have tumbled from around 330 000 tonnes to below 270 000 tonnes during the period under review.

Prices for special high-grade zinc have increased by around US\$ 250 per tonne since early June to edge above the US\$ 3000 mark. Zinc scrap has followed this sharp upward movement, with old zinc scrap (Zebra) climbing to around US\$ 2144 per tonne and old zinc alloy scrap to some US\$ 2062.

The global refined zinc market extended its deficit from 133 000 tonnes in the open-

ing five months of 2016 to 178 000 tonnes in this year's corresponding period, according to the International Lead & Zinc Study Group. Production edged 20 000 tonnes higher on a year-on-year basis to 5.585 million tonnes whereas usage climbed by 65 000 tonnes or 1.1% to 5.763 million tonnes. After a sharp fall in 2016, US apparent demand for refined zinc increased by 19%; apparent usage climbed 1.8% in Europe but dropped 2.8% in China, the group points out.

In response to market tightness, BMI Research expects the zinc price average to be US\$ 2700 per tonne both this year and in 2018, before rising to US\$ 2800 in 2019. ■

### Contributing to the non-ferrous metals market analysis:

- Ralf Schmitz, German non-ferrous trade association VDM (Europe)

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## China's ban bombshell

Most of the talk in recovered fibre circles over recent weeks has centred on the announcement by China that it plans to ban imports of certain recyclables by the end of the year, including 'unsorted waste paper'. The news comes against the backdrop of healthy demand on almost all fronts.

### Europe

#### Business hindered

Incoming volumes of the lower grades of recovered fibre have been typically slow during the summer period; coupled with good demand, this prompted most European mills to put up their prices in July. Stocks of OCC are generally not very high within Europe's recycling yards.

Prices increased rapidly again for the Far East - principally for the high-end grades such as OCC 90/10 - but have come off their peak in more recent days. In China, the National Sword import control initiative is continuing to hinder business although good-quality material always seems to find a market. Shipping rates have tended to go lower and vessel space has become more easily obtainable.

Buyers in Indonesia are not very active at present while some volumes have been shipped into Vietnam and Turkey.

The holidays have also curtailed the volumes of deinking material reaching merchant processors' facilities at a time of very good demand in Europe; some demand is also continuing to come from Asia - but at slightly lower prices. European demand remains healthy across the range of middle grades and prices have been firm to higher in most instances.

Demand is strong and prices have improved for the limited volumes of the higher grades becoming available.

### North America

#### Potentially 'devastating'

US mill demand and prices for OCC remained strong throughout July despite the prolonged Independence Day holiday early in the month. Traditionally, mills buy heavily prior to July 4 to ensure sufficient inventory to get through the holiday - and markets often fall off after that point.

Despite some signs that demand was starting to slacken off slightly towards the end of July, most traders are anticipating that domestic OCC prices will hold steady - or even catch a small upswing - in August.

With a strengthening American economy, containerboard production is running more than 3% ahead of that for this time last year, increasing OCC demand by around 4%. Mill inventories were reportedly full at the year's midpoint, and major mill groups with recycling divisions were said to be selling more tonnage into the market in mid to late July rather than storing it. However, many traders believe continued demand should keep OCC prices stable at least through August.

For the third month in a row, giant Chinese buyers such as America Chung Nam and Ralison International informed suppliers of reduced buying prices during the final week of July, prompting speculation that they were simply seeking to influence a leading market index that publishes during the first week of each month. 'They did the same thing in May and June; then they had to come back up the following week,' notes one exporter. 'So I guess we'll see how badly they need paper.'

Questions are also being asked about the Chinese government's recent announcement that it will prohibit imports of 'unsorted waste paper' and other recyclable commodities at the end of the year. The US Institute of Scrap Recycling Industries (ISRI) and the BIR world recycling association have described the policy as potentially 'devastating' to the global recycling industry.

US exporters, however, appear generally less concerned: firstly, because they don't believe Chinese mills can run without the 2.5 to 3 million tons of mixed paper that the US ships annually to China; and secondly, some exporters believe 'mixed' paper will still move to China under another classification, noting that two new ISRI 'mixed' paper-related grades - No. 54 Mixed Paper and No. 56 Residential Papers and News - both specify 'sorted' in their definitions rather than the 'unsorted' paper referenced in China's ban proposal.

America's exports of OCC and mixed paper fell by double-digit percentages in the first five months of this year whereas the nation's overseas shipments of deinking material and ONP were significantly ahead of

the previous year, according to latest figures from the US International Trade Commission.

Volumes of OCC leaving US shores fell 14.26% in January-May this year to 4.01 million short tons while mixed paper exports tumbled 10.73% to 1.623 million short tons; the respective totals for the same period last year were 4.677 million short tons and 1.818 million short tons.

US deink exports surged 14.71% from 359 152 short tons to 411 986 short tons when making the same comparison while the ONP shipments increase was just under 5% to 847 510 short tons. Mechanical/brown exports from the USA were almost 25% higher in the opening five months of 2017 at 1.291 million short tons.

## Asia

### Seeking alternative sources

July was a very hot month for the brown grades as prices jumped Euro 20-25 per tonne, with the only buyers being the Chinese mills. This coincides with the announcement that China plans to ban all SMP coming from Europe and the USA. Chinese mills are now seeking alternative sources of fibre such as 70/30 OCC and 80/20 OCC, prompting tremendous demand in July.

In early August, however, demand has been dropping and prices for the brown grades have been retreating towards June levels. Outside of China, none of the mills in other Asian countries had been able to follow the strong price increase; India is completely out of the market and so is Indonesia. South Korea has restricted itself to buying some news & pams while small volumes of fibre have been purchased by Taiwan, Vietnam and Thailand.

Freight rates have remained under pressure and appear likely to head even lower in the coming weeks. ■

### Contributing to the recovered paper market analysis:

- Melvin de Groot (Van Gelder Recycling, the Netherlands)
- Mariëlle Gommans (Bel Fibres, Belgium)
- Ken McEntee (Publisher of The Paper Stock Report, USA)

## Kenya no longer intends to ban used clothing imports

There has been some welcome news from the international used clothing market as reports suggest Kenya no longer intends to ban used clothing imports. Its industrialisation minister Adan Mohamed is reported as saying that it is Kenya's 'desire to develop and promote our textile industry in our country to create more jobs for people in our country. And through the transition of market forces, we would like "mitumba" clothes (ie, consignments of used clothing from abroad) to compete with clothes that are produced within East Africa, within Kenya, and if those products are much more competitive and much more consumer friendly, then of course you will see a reduction in the "mitumba" business in our country. But it is not going to be through a ban or anything of that nature'.

It remains to be seen whether other East African Community (EAC) members - namely Burundi, Rwanda,

Tanzania, Uganda and South Sudan - will continue to pursue their intended ban on used clothing imports by 2019. This would seem difficult without the EAC breaking its own free-trade principles. With Kenya allowing imports, the other EAC countries would have to ban imports of used clothing from Kenya, thereby creating an internal barrier within the EAC.

This welcome news arrives from Kenya amid otherwise mixed international market conditions. Collection quantities and stock levels remain firm. Demand for better-quality clothing remains good in Eastern Europe, which is contributing to rising values for originals. But it is still proving difficult to shift lower-grade materials.

Demand from Africa remains mixed: orders are still coming through but some exporters are reporting slow payments exacerbated by currency fluctuations. ■



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# Uncertain fate for plastics recycling market

In a tumultuous period for the plastics scrap trade, China has further tightened its stance on imports of certain solid wastes, going as far as to signal its intention to ban inflows of some scrap materials by the end of this year. With plastics scrap at the epicentre of this upheaval, international prices have suffered a steep fall.

The motive behind China's National Sword campaign has been to control the quality of solid waste imported into the country so as to protect the environment, but this may now turn into a ban on the importation of certain solid wastes. Plastics scrap is one of those solid wastes whose importation into China might be restricted from January next year.

In mid-June, during a major crackdown in Guangdong province's Shantou City, a joint-action team of 172 consisting of city customs officers and representatives from AQSIQ as well as environmental protection and industry/commerce departments, seized 85 000 tons of smuggled solid waste with a value

of RMB 1 billion (US\$ 150 million), exposing five organised illegal gangs. The seized solid waste was primarily waste plastics and metals from 16 warehouses in Guangdong. Suspects were arrested and found to be illegally using third-party import permits for plastic waste imports.

A spokesman for Shantou customs stressed that the four government departments to have participated in this joint action would continue to work together and strengthen their fight against solid waste smuggling.

Then at the beginning of July, China's ministry of environmental protection created 60 groups - each consisting of seven inspectors

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### Contributed by

Surendra Patawari Borad, chairman of the BIR world recycling association's plastics committee and ceo of Gemini Corporation.

- to check around 1800 recycling units handling plastics, metals and paper; more than 1250 environmental officers were engaged to support these groups. The aim was to crack down on those recycling units which were illegally importing or storing foreign solid wastes, including plastic scrap.

Through this initiative, environmental inspectors uncovered many recycling units which were operating illegally; many did not have processing licences and were buying goods from trading companies, importing into China in the name of major recyclers. Some did not have any recycling unit or had import permits that exceeded their capacity. Some small units were found to be operating with inadequate facilities, such as a lack of proper water treatment or old machinery that was heavily polluting the environment, while others were engaged in the unauthorised disposal of hazardous waste.

All those companies found to be operating illegally have had their licences

revoked. Many consumers with the necessary licences opted to reduce their buying owing to the tightness of the checks on the quality of plastic scrap arriving at Chinese ports. This move scared importers who were not prepared to take any kind of risk, resulting in a steep drop in plastic scrap prices on the European market.

Europe's exporters tried to develop outlets in other countries to which to send their plastics scrap but were not able to shift large volumes. It should be remembered that China and Hong Kong together import more than 76% of all plastics scrap exported from Europe.

### China notifies WTO

Finally on July 18, China officially informed the World Trade Organization (WTO) through Notification G/TBT/N/CHN/1211 of its intention to ban the import of certain scrap materials by the end of 2017. This news produced reverberations

around the world, prompting many organisations - including BIR - to ask the WTO for an extension to the deadline for submitting comments on the matter so that all stakeholders would have the opportunity to express their concerns.

Through the notification, the Chinese government has informed the WTO that it will ban imports of four classes and 24 types of solid waste by the end of this year, including plastic waste from household sources, vanadium slag, unsorted waste paper and waste textile materials.

The fate of the plastics recycling market is unclear. China is the world's largest importer of plastic scrap and so if its doors are closed, where will all the material go? Recycling activity is growing within the EU but the region is not yet ready to absorb the quantities which China has traditionally bought. Some clarification of this proposed ban is anticipated by September - until when the world plastic recycling market is likely to remain very tense. ■

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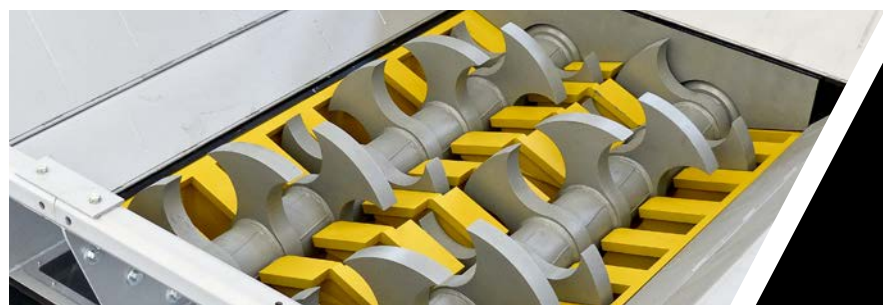
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In today's high-tech world, it has become increasingly rare for people to sit down together and simply talk. But when conversations are extended to teenagers, you had better expect the unexpected....

# The burning question

**H**ave you noticed just how hard it can be at times for a group of people to get together without one or several of them succumbing to the modern-day distractions of iPods, iPads, tablets and the like?

A few months ago, however, Earth Hour presented an opportunity for me, my wife Helga and some visiting friends to sit in our lounge at home and try to rediscover the lost art of conversation. This World Wide Fund for Nature initiative encourages everyone to turn off non-essential lighting for an hour to show their commitment to the planet.

There were six of us, including our friends' late-teenage son Tom who we hadn't seen for years. We remembered him as a lively, cheerful child but adolescence had played cruel tricks on him, reducing his excitability at life's wonders

*'Tom suddenly seemed to grow into his role of Devil's Advocate'*

to a world-weary disenchantment expressed through a limited range of caveman-like grunts. He had spent most of the afternoon swigging our beer, staring at his smartphone and resisting every attempt to engage him in a chat. After several hours of this cold-shoulder treatment from him, I don't mind admitting that he was getting on my nerves.

So it was partly out of environmental consciousness and partly to annoy the hell out of Tom that I suggested we should honour Earth Hour. Just to irritate him even more, I said we should not only turn off all the lights but also switch off electrical and electronic devices so we could focus solely on conversation. And with a smile towards the youngest of our guests, I added as a fiendish flourish: 'And we shouldn't open the fridge either because it would mean the light coming on inside.'

Tom was aghast that access to the beer was being denied for 60 whole minutes. And so, with candles flickering at strategic points in the lounge, Earth Hour began with a hugely disgrun-

tled teenager suggesting my attempts to save the planet were 'just one big waste of time'. And in an act of sly desperation, he added: 'Everyone knows the fridge light stays on even if the door is closed.'

We just dismissed his petulance, although his observation did lead laterally into that age-old debate about whether a tree crashing down in a forest makes a noise if there is no-one there to hear it. As you know, I love thinking through such riddles. I explained that, since sound is vibration transmitted to our senses through the ear and is recognised as sound only at our nerve centres, the falling tree will produce vibration of the air but no sound if there are no ears to hear it.

Tom snorted in disgust at my attempts to show learning and snapped back: 'Here's a deep and meaningful question for you. If a man falls to the ground overcome by thirst, will others get him a beer from the fridge even during Earth Hour?' Nice try, but no beer for you just yet, I thought to myself. 'Not long to survive now,' I replied firmly.

But Tom didn't seem disappointed by this rejection. Instead, he suddenly seemed to grow into his role of Devil's Advocate. 'So we are saving electricity, but isn't the act of burning candles bad for the environment?' he asked with a mischievous grin on his face. 'Isn't burning candles for an hour just replacing one environmental problem with another?' The rest of us were stunned into silence. 'And are your candles made from paraffin wax? They are the worst for the environment. They release a number of carcinogens when burned - like benzene, formaldehyde and toluene.' More silence from the rest of us.

Tom was now a relentless force of nature. 'Some candles even have lead in their wicks and release toxic fumes when burned,' he said. 'So you should be burning soy or beeswax candles if you want to save the planet.'

I looked at Helga and she just shrugged. I looked at my watch. There were still 25 minutes of Earth Hour to go. I got up, switched on the light, blew out the candles and said: 'Hey, Tom, do you fancy a beer?'

**Manfred Beck**

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