

Recycling International

Recycling International
TOP 100
2022



Recycling International's 2022 Top 100

Headaches versus high hopes

Turbulent markets, high energy and freight costs, as well as growing uncertainty about future scrap trade restrictions, are the biggest concerns among recyclers, according to a survey of business leaders and company bosses included in Recycling International's latest Top 100 of our industry's most inspiring people.

AMERICA IN THE LEAD

Number of countries represented: 32
Five most represented countries: USA (20), UK (13), Belgium (8), Germany (8) and The Netherlands (7).
Notable mentions: India (5), Mexico (3), Singapore (3), UAE (3), Serbia (2), Italy (2) and Indonesia (2).
Our list also features pioneers from Australia, Canada, Poland, Ukraine, Thailand, Greece, New Zealand, Norway, Finland, Spain, Brazil, Israel, Ireland, Austria, France and Switzerland.
The African continent is represented with recyclers from South Africa (3), Nigeria (2), Rwanda (1) and Ghana (1).

Commodities included:

Metals: 44
E-scrap: 26
Plastics: 17
Batteries: 4
Paper: 2
Textiles: 1
Tyres/rubber: 2

Recyclers are generally optimistic about the future of their business and activities. At the same time, they are confronted with 'so many negative things affecting daily work and operations'.

Companies continue to be challenged by troubled logistics, along with 'sky high' shipping costs. Another source of great concern are restrictions in the pipeline for scrap exports from Europe, many recyclers tell Recycling International.

INVESTMENT WAVE

Even so, company owners report confidence in the future of their businesses, war on no war; energy crisis or no energy crisis. Proof of that confidence may well be the huge investments that are underway throughout the sector. For example, Germany's Schuy Recycling is putting millions of Euros towards extending yards, new equipment, and – 'unfortunately' they say – consultants doing the paperwork necessary for permits.

Aboura Metals, a major player in the Middle East, is investing serious money in new technology to boost capacity and upgrade its operations, company director Ibrahim Aboura reports from Dubai.

In the south of France, meanwhile, MTB's Jean-Philippe Fusier is talking to banks about an extra EUR 30 million to modernise his facility. Another 'struggle' for Fusier, as with so many fellow recyclers, is hiring people: 'What a challenge!'

NOT ABOUT MONEY

As with the first RI Top 100 last year, the 2022 list is not ranked by scrap volume or company turnover. Put simply, it contains people we believe are making the difference, are an example or inspiration to others, or stand out from the crowd.

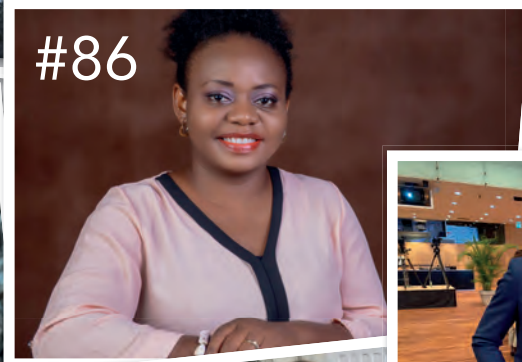
ONLY WINNERS

An important aspect to underline is that RI's Top 100 is not a winner-takes-all ranking event. Everyone in the list is a winner – whether they are at number 1, 37 or 99. Nor is it a static list as it's our intention to publish the Top 100 every year. And we want to make it more wide-ranging and comprehensive each year. So, if you're not in the list this time, you may well be in the next.

GIRL POWER

Our 2022 list contains recycling hotshots from 32 countries worldwide. There are 48 newcomers. While North America and Europe have the most places, we are noticing more initiatives popping up in Africa (see box). The Top 100 also shows that recycling is becoming less of a man's world. Of the 100 leaders and projects spotlighted, 32 are women, up from 14 on the 2021 list. 📌

Recycling International
TOP 100
2022



RECYCLING INTERNATIONAL'S TOP 100

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1

George Adams (USA)

2022 is the year of George Adams. Against strong headwinds, the owner of US metal recycling giant SA Recycling has grown his business to a US\$ 3.6 billion (EUR 3.2 billion) turnover enterprise with 125 yards and facilities. This puts it among the top three (if not the biggest) metal recyclers in the country.

Adams plans to continue that growth path. 'We will acquire more yards that complement our existing businesses. Because of our size now, I believe our growth will accelerate even more in the future. The more yards you own, the more money you make and therefore the more capital you have to buy more yards.'

Adams has a warning about the hungry US steel industry. 'With new steel mills being built, there will be a shortage of scrap. I believe that steel makers will feel the need to try to control their supply. We have seen multiple examples of this with many large acquisitions of scrap businesses and I don't believe the consolidation will stop there.'

Would he ever sell up himself? 'No way!' I've been approached many times but the truth is that I've never sold a single yard. I believe SA Recycling has made more acquisitions in the past ten years than anybody in the US but we have never sold one of our yards. SA Recycling and the scrap business is really my life; I would never sell.'

Adams is not only interested in personal achievements - he wants to help others to be successful, too. In his book 'Create the Connection', Adams shares 25 strategies for success in leadership. One of his lessons: 'I've always believed that success in business doesn't mean much if you're not also successful in life.'



2

Evgenia Gordeeva (Ukraine)

This brave woman from southern Ukraine fully deserves to be in our list. Since 24 February, Gordeeva and her colleagues at aluminium recycling firm Mekhanicheskiy Zavod (MZ) have been on the run from Russian bombs. 'All day long we hear the shooting and the bombing,' she told RI in early March on the phone from a bomb shelter in the besieged city of Kherson. Meanwhile Evgenia and her son Kyrill have moved to the UK, waiting for the day they can return home.

3

Susie Burrage (UK)

Burrage has her roots in scrap and is md of Recycled Products. Her grandfather was a founder member in London of the National Federation of Scrap Iron and Steel in 1919. Burrage was the first woman to join the board of the 100-year-old British Metals Recycling Association in 2014. She was subsequently elected president in 2016, a position she still holds. She is also an active member of EuRIC and BIR and was appointed president of EUROMETREC. 'I am very proud of all my achievements – especially the glass ceilings I have broken.' Burrage has become a powerful role model for women in the recycling industry.



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4

Veena Sahajwalla (Australia)

Professor Sahajwalla believes in the power of 'big ideas', which she developed in the SMART Centre at the University of North South Wales in Australia. Her commercialised electric arc furnace 'green' steelmaking process utilises millions of waste tyres, otherwise destined for landfill, as a partial replacement for coke. Sahajwalla launched the world's first 'e-waste micro-factory' in 2018 and established a similar facility dedicated to plastic scrap in 2019. She was awarded the prestigious 2022 NSW Australian of the Year.



5

Bartosz Kubicki (Poland)

Barely a month goes by without the owner of Elektrorecykling announcing a new project or solution to tackle complex materials or to boost his business. The company reports 'double digits annual growth in volumes in all streams between 15 to 20%' only two years after volumes shrank 50% in the pandemic. During these hard times, the entrepreneur found time to think of others and he became involved in a project to provide laptops for schoolchildren. Kubicki has recently invested EUR 5 million in smart tech for granulating plastics and another EUR 7 million will be pumped into a second new line next year. He sees great opportunity in polymers and solar panel recycling and has announced expansion of a new branch in Poland.



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6 Daniela La Porta (Italy) Second generation to lead Elle-Elle, an Italian recycling business company built on solid family entrepreneurship. Based near Cesena on Italy's Adriatic Coast, Elle-Elle is a modern, medium-size recycler handling electric motors, copper and aluminium.

In the next five to ten years recyclers in general, and Elle-Elle in particular, will have to continue to invest in sustainable operations and smarter technology. 'It's the only logical path to follow if we want this sector to survive,' Daniela stresses.

Asked what is the main lesson she has learned from her father and company founder, she replies: 'His work ethic and his passion for the job: always give your best. Scrap is in my blood and I love it, probably thanks to him.'

7 Michael Schuy (Germany)

The owner and ceo of yet another strong family scrap business in this list. Schuy Recycling (EUR 50 million turnover in 2021) is among the largest privately owned recycling companies in Germany, owned and managed by Schuy and his children Jacqueline, Lucien and Charlène.

Their 80 000 m2 facility and yards at Limburg an der Lahn near Frankfurt handle on average 7 400 tonnes of ferrous scrap per month - or, as the former EuRIC president puts it: 'The amount used to build the Eiffel Tower'.

Schuy is busy preparing expansion of its operations and yards to 90 000 m2. 'Huge amounts' are paid to expert reports and consultancies to get the required permits for extra storage capacity and installation of a second shear. But it's all for the good cause: 'Keeping our business competitive.' Schuy's biggest concern is the 'growing risk' of scrap export restriction.

8 Robin Wiener (USA)

Wiener joined ISRI in 1989 and has been president since 2000, representing 1 300 member companies operating in nearly 4 000 locations across the US while lobbying with recycling stakeholders in 34 countries. Wiener ensures important hot topics, including trade policies, workplace safety and technology, reach the top levels of state and federal government. 'Recycling volumes in the US are up [+12% last year], demand is healthy and prices are elevated.' She points out that turnover in 2021 hit US\$ 16 million.



9 Max Craipeau (Singapore)
Saving and ultimately recycling the ever-growing stream of PET bottles heading for the oceans may seem mission impossible in Indonesia, the world's biggest marine plastics polluter. But Craipeau and his SEArcular business initiative intend to prove it can be done. Frenchman Craipeau, ceo of plastics recycling and trading firm Grencore, has been living and working in Asia for almost two decades and in 2021, at the peak of the pandemic, he moved to Singapore to coordinate Grencore's activities. SEArcular continues to grow across the region, with strategic partnerships and joint projects in Cambodia, Vietnam, Malaysia and Thailand.

11 Lim Teck Siang (Singapore)
Lim operates a metals and wood recycling company, the Kim Hock Corporation, which is claimed to have Singapore's only shredder, a 4 000 tonne HP Harris machine. The most interesting part of the company's operations is a bio-waste plant that provides energy for the recycling machines, material handlers and electricity in the office building. A constant inflow of green waste from gardens, parks and trees in the tropical island state is used to heat the incinerator. Lim, who has a technical background and education, developed the plant himself.

10 Danish Mir (USA)
These are exciting times for the ceo of electronics recycler Igneo, formerly known as Weee Metallica. As well as rebranding the business, they are doubling capacity in France and rolling out a network of plants and a collection of processing hubs across the US. The 'seeds of recycling', as Mir calls it, were planted in one of his earlier jobs, where he saw a business opportunity for by products and residues from smelters and refineries. 'I learned that one man's garbage is another man's gold.'
By 2030 at least six Igneo plants will pop up. That's an expansion in France/ Europe and multiple plants in the US, including Savannah and a second site 'probably on the West Coast.'



12 Dhawal Shah (India)
'Recycling is good karma.' A partner at scrap metal trade firm Metco, Shah is a true ambassador for his country and its recycling sector. Talking with this commerce graduate from Mumbai helps to better understand India. 'We have to undo decades of inefficiency and corruption but the good days will come. This is all work in progress. I think recycling activity is at helm of bringing socio-economic transformation.'
What does he love about his job? 'Skilled human hands and modern machines like heavy media separators and sensors working in harmony give me an adrenaline rush. Beyond that, dealing with super crazy markets and doing business in 40 different countries is also very exciting.'
Shah is vice-president of the Metal Recycling Association of India, serves on the metals committee of the Federation of Indian Chambers of Commerce and Industry and is also divisional president for non-ferrous at BIR.

13

Mike Biddle (USA/UK)

The story of Biddle and Evok Innovations starts at his home - or rather his garage - in California in 1992. It was there he launched MBA Polymers which mushroomed into a state-of-the-art production unit in China with a processing capacity of 40 000 tonnes per annum (2006), a 50 000 tonnes per year recycling plant in Austria (2007) and one in the UK (2010). 'MBA has kept well over 250 000 tonnes of plastics out of landfill or the oceans - or from going up in smoke.'

14

Shelley Padnos (USA)

Padnos has been a well-known name in the American scrap business for almost four decades. Her family company, based in Holland, Michigan, first opened its doors in 1984 and she is proud it now spans four generations. 'We have 20 locations where we treat metals, paper, plastics and e-scrap and operate 13 recycling centres throughout Michigan where the public and small businesses can recycle their scrap, including used electronics, for quick payment.' This year, in recognition of her ongoing contributions to the sector, the Institute of Scrap Recycling Industries awarded Padnos its Lifetime Achievement Award. During the awards ceremony she called on to fellow recyclers to bring more diversity to the sector: 'We can still use a lot more of that. Hire somebody who does not look like you and our industry will be better off.'



15

Caroline Craenhals (Belgium)

Craenhals leads the family business, which has its headquarters in Antwerp, and operates five sites in total. 'We process around 1.5 million tonnes of material every year, ranging from end-of-life vehicles to washing machines and other bulky electronics.' 2022 marks an important milestone for the recycler as the fourth generation company celebrates its 100th anniversary. 'Many things have been thrown at recyclers over the last few decades alone: economic crashes, wars, protectionism, geopolitical games, ever more ambitious rules. It's a long list and we overcame it all. I think it shows how resilient and vital our sector is. This calls for a nice glass of champagne, doesn't it?'



16

Vipan Garg (India)

A mature car recycling sector in India could generate EUR 5.7 billion per year, according to entrepreneur and businessman Vipan Garg. In 2019 he launched the country's first car shredder in the state of Punjab. B Lal Steel Shredding is now looking to expand to other parts of India. 'It is our ambition to expand our presence across various cities once the Punjab shredder runs at full capacity.' Garg expects a large number of old vehicles to pour in for recycling within the next couple of years. When that happens, there will be a need for more shredders at different locations and we will be expanding accordingly. 'It is my vision and dream to be present in every major city in India in the future and to recycle as many vehicles as possible.'



17

Mark Lewon (USA)

Former ISRI chair Lewon is an optimistic man, always advocating the interests of the entire sector rather than those of his own scrap business in Salt Lake City. He leads Utah Metal Works, a 50 000 tonnes metal scrap business, together with his brother Chris and father Don. 'It is nice and fun to work with family. Most of the time there are common goals and interests that makes running the business enjoyable, especially when talents are spread around so that everybody doesn't want to be the salesperson.'

19

Frits Stam (The Netherlands)

This metal recycler made headlines this year by introducing a EUR 500 fine for every load of scrap in which a battery is found. After yet another scrap fire caused by a lithium battery, Stam had had enough. The co-owner and general manager at Regelink, a metal recycling firm in Kampen in the north of the Netherlands, has suffered five lithium fires in recent years. 'We are really fed up. Everyone is confronted with it but nothing is done about the cause. Those batteries do not belong in the scrap.'



18

Murat Bayram (Germany)

The scrap trader from Hamburg (Bayram is director for non-ferrous at EMR) remains an inspiring, frequently invited, speaker at conferences who is always happy to share his views on the industry's ups and downs. Bayram is a storyteller. Whether live on stage at BIR shows with fellow scrap traders and 'amigos' Mark Sellier and Michael Lion or via video stream, he always advocates the interest of the recycling sector in general rather than promoting the company he represents. People enjoy his style of presentation: open, enthusiastic and humorous.



20

Jean-Philippe Fusier (France)

Fusier (left) is mostly known as a recycling machinery producer operating under the same MTB brand name. But, as with most equipment suppliers, MTB began as a scrap recycler and today manufacture and scrap recycling go firmly hand in hand. Fusier is a visionary and innovative recycler, rather than being motivated by a desire to make ever more money. What drives him is a healthy environment for future generations and to secure the future of his company. Asked for the biggest challenge, he replies: 'Finding staff. In the past six months, we have been hiring one person per week on average, which is not easy, and that's challenging.' Meanwhile Fusier has launched 'Mission 2025' to establish a new recycling plant that is 'low on noise and dust'. Getting the plan realised is one thing, according to Fusier, but convincing the banks to step into this EUR 30 million investment plan is 'an even bigger challenge'.



21

Tony Selvaggio, owner of 3smart (USA)



More millennials are starting their own recycling enterprises, including Selvaggio, a ‘social entrepreneur’ who runs eSmart in Tampa, Florida. Originally from Venezuela, he immigrated to the US fresh out of college to join a relative’s recycling firm. After gaining experience as a business development advisor, he realised that most e-scrap was not recycled and set up eSmart in response. The father of two has a personal mission: creating computer labs for kids who don’t have access to technology. ‘So far we have deployed more than 2 000 refurbished devices to more than 50 non-profit organisations in the United States, Colombia, Haiti, Peru and my home country Venezuela,’ Selvaggio says.

22

Craig Thompson (UK)

At an early stage, this e-scrap plastics recycling expert saw that China’s scrap import restriction would have a huge impact on recycling businesses across Europe and North America. ‘We need to press the reset button as end markets for e-scrap plastics are changing forever,’ he warned in an interview with RI in 2018. Over the past ten years, Thompson has worked with the majority of e-scrap recyclers in Europe, Canada and the USA on outlets for their e-scrap plastics. Before the pandemic, Thompson was a global citizen, constantly on the move and his business card had mobile numbers for Hong Kong, UK, Netherlands, Brazil, Latvia and North America. He settled down in Yorkshire, the English region where he grew up, to establish Areera, claimed to be the UK’s most advanced automated robotic recycling facility for flat panel displays, notebooks and x-ray separation of electronics and e-scrap plastics.

23

Catherine Lenaerts (Belgium)

Lenaerts knows everything about end-of-life vehicles, including e-mobility. She is the managing director of Febelauto’s new spin-off venture Watt4Life, which transforms used car batteries into energy storage systems. This makes Lenaerts an advocate for both car and battery recyclers. As a popular speaker at international events, she is eager to share her know-how with industry stakeholders across the value chain. Febelauto’s turnover exceeded EUR 1.5 million in 2021. ‘We’re ready to scale-up Watt4Life now.’



24

Bill Rumpke Jr. (USA)

US-based family business Rumpke announced a major investment this year with US\$ 50 million (EUR 43.7 million) going towards a ‘state-of-the-art’ recycling facility in Columbus, Ohio. Ceo Rumpke Jr. (left) asserts the new site will be the fifth largest and most technologically advanced recycling facility in North America. The 60 000 square foot facility is scheduled to open in the first quarter of 2024 and will be equipped with ballistic separators and smart optical scanners to phase out manual sorting. The boss says this will ensure the company is ready for the future.

25

Tom Bird (UK)

We said it in our first Top 100 and we say it again: being BIR president at times like these is not easy but Bird has done an excellent job. With a dedicated team in Brussels, he has led BIR through the pandemic from the front. In advocating free scrap trade, he has stood up firmly against a European steelmaking industry seeking tighter rules on ferrous scrap exports from the EU. Assuming Bird has a competitive character, the high score of 1 300 recyclers attending the recent BIR world recycling convention in Barcelona must be another crown on his presidency, which will end in May 2023. The question remains: who will be next to lead BIR?

26

Maja Muškinja (Serbia)

Muškinja is logistics manager at Steel Impex, a leading Serbian recycler.

Having started in 2008 on the site of a former state-owned yard, the EUR 25 million turnover company today processes more than 100 000 tonnes of ferrous scrap per year. More than a decade on, Steel Impex is said to control half of Serbia's total steel scrap flows. The company is eager to grow further and innovate. The warehouse at its main facility in Kraljevo is covered with solar panels, making the location '100% energy neutral'. Investment is also on the way for a modern tyre processing line. Meanwhile Muškinja has announced the launch of a third yard in Belgrade.



29

Federica Foterni (Italy)

Most refrigerators and washing machines on the Italian island of Sardinia ultimately end up in the shredder at West Recycling.

From a bone-dry industrial zone outside Cagliari, Federica Foterni leads a solid e-scrap business under challenging conditions.

Like elsewhere, Sardinia could not escape from Covid. The good news is, West Recycling saw the influx of e-scrap explode, a result of the severe lockdown. 'Since people could not go out for lunch or dinner, many suddenly needed bigger fridges at home. You could see a lot of replacement, which means sooner or later these the old and discarded devices end up at our yard.'

Sardinia may be a remote recycling outpost but that does not mean the state of recycling on this Mediterranean island is underdeveloped, proves Foterni, who has serious plans to introduce robotic arms at the washing machine dismantling line along with an update of the refinery lines.

27

Frazer Barnes (UK)

Barnes heads Gen2Carbon, previously known as ELG Carbon Fibre, and is a carbon fibre recycling expert.

The company ensures end-of-life material from various industries, notably the automotive and aerospace sectors, flows back into the loop in 'premium' condition. The company is collaborating with Boeing to transform aerospace-grade composite material into products such as electronic accessories and automotive equipment.

30

Henry Sobieraj (Germany)

Managing director at Nickelhütte Aue, a EUR 200-plus million turnover multi-metals recycler which is part of the Jacob Metal Group.

By 2026 the company will have invested EUR 15 million doubling its current electric vehicle battery recycling capacity. The Aue plant currently handles up to 7 000 tonnes of batteries but 'with huge volumes of EV batteries rolling in over the coming years the best is yet to come and we'll be prepared'.

Sobieraj has an interesting background. He grew up in the German Democratic Republic as son of a cable recycler. Before joining the recycling sector, he served in the GDR Navy, sailing the Baltic Sea.

28

Surendra Borad Patawari (Belgium/India)

'Recycling is my passion, recycling is my life.' Patawari is the founder of Gemini, an international sourcing and supply organisation with operations spanning more than 40 countries. Its product portfolio includes core divisions of plastics, steel, rubber and paper. Besides being a successful businessman, Patawari is also known for his commitment to creating a social impact through multiple long-term initiatives in India. He has adopted 11 Indian villages to support their medical needs; built two schools for 400 students and backs the planting and maintenance of more than 100 000 trees.



31

Marc Ehrlich (Switzerland)

Smart entrepreneur and recovered paper recycler, Ehrlich is always looking for opportunities to grow his business and company, Vipa. To get better control within all major sourcing regions, Vipa has recently launched Vipa Japan, Vipa UAE and Vipa Ireland, 'and we've also started a metals division and a prime paper division.' Vipa USA, which started in 2019, is growing year-on-year.'

Summarising the company activities, the entrepreneur says: 'Altogether, more than 100 000 maritime containers of circular economy.'

Ehrlich believes the biggest change in the paper recycling business will come from legislation.

32

David Dodds (UK)

Featured on pages 16-19 in this issue of Recycling International, the managing director of Sackers Recycling (UK) learned the recycling industry from scratch. 'I worked in the yard, I was a crane driver, cut steel with oxyacetylene cutters, worked on the weighbridge and sat in the office to map out the schedule for the lorries. That was my education in the scrap business.' Today Dodds heads a multi-million-pound enterprise doing business all over the world and securing its future by focusing on scrap quality. Sackers is investing EUR 3 million in a new plant and technology to increase volume by 56% on infrastructure and improve efficiencies and output.



33

John Sacco (USA)

Recycler, recycling machinery producer, podcast host and, most recently, documentary maker. 'I love recycling but I also love doing these other things', the entrepreneur from Bakersfield told RI during the latest ISRI convention. With his podcast and videos he wants to inspire others and convince the broader public of the importance of recycling. We admire Sacco's creativity and passion.

34

Derk-Jan van Heerden (The Netherlands)

Van Heerden's company Aircraft End-of-Life Solutions has processed nearly 100 aircraft with up to 95% of the materials being recycled. He speaks of a bright future as 'there are lots of opportunities for growth'. Dealing in spare parts from salvaged aircraft has turned out to be a multi-billion dollar business worldwide, according to Van Heerden, who has a degree in aerospace engineering.

35

Kyle Wiens, founder of iFixit (USA)

There is probably no one else in the industry who has taken apart as many devices as tech expert Wiens. The founder of iFixit has built a global community of people looking to repair their own electronics. Wiens and his quickly growing team publish step-by-step product manuals, with photos, to ensure a safe and successful outcome. These cover not just phones and laptops but virtually all types of consumer electronics. The entrepreneur is a popular blogger/vlogger and speaker at recycling events. He is now using his platform to advocate the right to repair.



36

Paul and Chris Coyte (New Zealand)

The Coyte brothers run the fourth-generation family business Hayes Metals, the largest producer of brass and bronze ingots in Australasia with manufacturing and warehousing facilities in New Zealand and Australia, employing 75. 'Hayes Metal has focused more on higher quality alloys,' say the brothers who have concentrated on staff retention and upskilling in the last 12 months. 'We have also invested significantly in technology and are in the process of installing a very bespoke, multi million Euro machine to significantly improve our recycling rates and focus on material which currently is either not recycled or incredibly difficult to recycle.'

37

Robin Ingenthron (USA)

Ingenthron founded Fair Trade Recycling to boost e-scrap recycling practices in developing countries such as Cameroon and Mexico and the circular economy is a 'truly inclusive society', celebrating global best practices. Good Point Recycling currently employs 40 people and had a turnover of over US\$ 3 million (EUR 2.8 million) in 2021. 'My business has survived so long by anticipating new economies. We had record sales of reuse parts from LED and LCD flat screen displays - our online sales have grown from US\$ 1 000 per month in 2017 to US\$ 50 000 per month last year.' Next, the entrepreneur plans to target solar panels.

38

Boyan Slat (The Netherlands)

It's impossible to talk ocean plastics without mentioning the founder of The Ocean Cleanup. The Dutch entrepreneur gained fame for developing a floating system that catches marine litter. Recycling International met him at the beginning of his journey, shortly before the system was deployed off the coast of San Francisco and has tracked his progress since. His latest systems are mobile units deployed in rivers in Malaysia and Indonesia and an 'Interceptor Fence' in Guatemala. The latter is home to the River Motagua, the world's most polluted waterway, which is Slat's next big project.

39

Salaam Sharif (UAE)

As former president of the Bureau of Middle East Recycling, Sharif is a true ambassador for the sector in this part of the world. Sharif Metals is built on strong family roots and operates through a network of fully equipped yards across the Arabian peninsula in Kuwait, the UAE, Saudi Arabia, Jordan, Lebanon, and Egypt. Recently, Sharif Metals has expanded and modernised its aluminium and lead recycling facilities.



40

Tapio Kuusakoski (Finland)

Recycling International frequently bumps into the e-scrap business director of Kuusakoski at conferences and trade shows and he has always company news to share. Latest from the Scandinavian recycling major is a EUR 20 million investment in new technology to further improve scrap quality. 'It's our response to the EU Green Deal. With ever-strict regulation and the growing demand for cleaner materials, there is no other choice than to take responsibility if you want to stay in business.'

41

Raymond Onowigun (Nigeria/UK)

'Only 1% of the world's recycled metals comes from the African continent,' says Onowigun, ceo of Romco Metals. His company, headquartered in London, is hoping to boost that figure with a new recycling plant in Ghana. 'I have ambitious plans for further expansion,' he adds. Romco Metals recycles more than 5 000 tonnes of non-ferrous scrap per quarter. The metals, mostly aluminium and copper, are sold to companies around the world, including major automotive manufacturers. Onowigun reports that revenues, at US\$ 8.1 million in Q1 of this year, are up for the seventh consecutive year while production increased 112%.



42

Willemijn Peeters (The Netherlands)

Entrepreneur Peeters runs Searious Business, which helps producers and organisations 'turn disaster into design' by transforming plastic production scrap into high-end products including furniture and accessories. She doesn't shy away from big projects, frequently working with major retailers, supermarket chains and local governments. A recent successful initiative includes helping Morocco clean up its plastic waste by improving its recycling infrastructure. 'We are also collaborating on a ground-breaking project, called Vita Nova, which aims to improve the recyclability of flexible polyethylene.'



43

John Shegerian (USA)

This entrepreneur from Fresno, California, campaigns for more sustainable and innovative e-scrap recycling. Shegerian has a weekly podcast called 'Impact' and he is frequently asked to speak at conferences, notably on the topics of cybercrime security. He built Electronic Recyclers International (ERI) from a start-up in the early part of the century into what is said to be one of the biggest electronics recycling companies in the world with eight facilities in the US and a global network of 100 sites in more than 46 countries. Shegerian is eager to introduce new technology to boost capacity and scrap quality and robots Sam and Ernie lend a hand at ERI's sorting lines in Fresno and Plainfield.

44

Venkatesha Murthy (India/Singapore)

Founder and owner of Vans Chemistry, an e-scrap business with its headquarters and trading office in Singapore and a recycling facility based in Bangalore, India. Murthy is among India's high-level recyclers who continues to be a driver of ambitious e-scrap projects around the world. He is currently involved in setting up a EUR 20 million integrated precious metals recovery & refining facility in Phoenix, Arizona (USA) to be up and running by the end of the year. A EUR 15 million e-scrap recycling plant is scheduled for Singapore while a similar, EUR 5 million project in Istanbul, Turkey is expected to start production by mid 2023. And at Bangalore the entrepreneur plans a EUR 6 million e-scrap facility to recover 25 000 tonnes of copper and precious metal per year. 'I am looking for investors.'



45

Petra Mussmann and Christian Stolz (Austria)

This couple heads the Austrian recycling company Ragg. Some 120 000 tonnes of ferrous scrap a year pass through the firm's mega shredder near Innsbruck. In recent times, Ragg's 'stay local' business model has proved a blessing and the ever-strict scrap import rules in China has led to a material boost for the company. Former hotel manager Christian Stolz joined the firm some 21 years ago. He may not have the scrap DNA from birth but he has certainly brought added value to the firm. 'I have learned from experience to pay attention to people. Hospitality is all about attention.' Stolz has recently placed large signs across the yard sharing details about the various commodities that are processed at Ragg, the volumes coming in and the recycling technology/equipment used, among other things. It's a nice tool which helps tell and teach visitors about the importance of recycling and how companies like Ragg contribute to a better environment.

46

st de Kluijver (The Netherlands)

'Offering take-back services to hardware users is the new normal.' De Kluijver's company Closing The Loop, based in Amsterdam, collects and recycles end-of-life devices and is inspired by the 'offsetting' principle. 'We have just made a deal with Vodafone Germany that sees it recycle a phone for every new one sold.' De Kluijver's network in Africa has facilitated the recovery of more than three million unwanted phones since 2014.



47

Gabrielle Walker (UK)

Walker wants to make people redefine the word 'waste' and understand what a successful business model looks like. Besides being founder of consultancy Valence Solutions, she is a passionate TED Talk speaker and former BBC TV and radio presenter with a PhD in philosophy. She has written for prominent publications such as The Wall Street Journal and The New York Times. Her new company Rethinking Removals targets zero waste and zero emissions at big corporations.



48

Bob Daviduk (USA)

Daviduk was at the cradle of a revolutionary bottle-to-bottle concept. In 2018, rPlanet Earth opened a 'one of a kind' integrated PET bottle and food packaging recycling plant in Vernon, Los Angeles. The 28 000 m2 facility has proved a major boost for plastics recycling capacity in southern California. More than US\$ 100 million (EUR 95 million) was invested in smart technology for the construction and design of the site, which includes earthquake proof foundations. Daviduk plans four other facilities in the US, all at least as big as the LA plant. Or, as rPlanet Earth puts it: '90% of plastic is not recycled. Let's change that together'.

49

Ranjit Baxi (UK)

First and foremost a successful businessman and trader, Baxi is a known and respected figure in the global recovered paper scene. His clear views on global market trends in paper recycling mean he is a frequent speaker and panellist at conferences. Baxi was the first Indian to lead the Bureau of International Recycling when he held the reins from 2015 to 2019. Another milestone he masterminded was Global Recycling Day. Launched in 2018 and taking place each year on 18 March, GRD spreads the word of recycling. 'As an industry we have a good story to tell. However, we were not really doing that enough.'

50

Team Alpla Mexico (Mexico)

Plastics packaging recycler Alpla is busy closing loops around the world, including Mexico. A major multi-million dollar plant to recycle plastic bottles in the south-east of the country is underway in a joint venture between Alpla and Coca-Cola. The Planta Nueva Ecología de Tabasco (Planeta) will be equipped with the latest technology. It will have the capacity to process 50 000 tonnes of post-consumer PET bottles per year, delivering 35 000 tonnes of rPET flakes. The facility will be supplied by a network of 18 collection centres spread across south and south-east Mexico.

52

Olivier François (France/Belgium)

François is a familiar face at global conferences with recycling expertise spanning various materials and applications, including cars and e-scrap. He has been with Galloo Group since 2000 and is an advocate for recyclers' interests at the French Federation of Recycling Enterprises. In April, the chemical engineer was elected president of European trade organisation EuRIC. Read the interview with François on pages 8-9 of this issue of Recycling International.

53

Venan Sondo (Ghana)

This recycler from Ghana is spotlighted in the IFAT conference report in this issue of Recycling International (page 23). Sondo represents Chaint Afrique, an organisation that promotes the recycling of fishing nets. Ghana has a huge fishing industry on its coast and around Lake Volta and unwanted nets used to be either buried, burned or thrown back into the sea or lake, spoiling the environment. Sondo and his team of volunteers decided to do something about it and started a network of collection points. By the end of 2022 they hope to have launched their tenth hub.



51

Gary Champlin (USA)

Previous ISRI chair heads a family owned tyre recycling business in 'fly-over state' Kansas. Five million scrap tyres pass through his hands each year. Champlin Tire Recycling services six US states. It also manufactures park benches and picnic tables. Managing director Gary Champlin (left) has been in the recycling business since 1992. Recycling is a business of relationships and recyclers could not see themselves working in any other sphere, he observes. 'I feel exactly the same way about our family's recycling business. The sense of accomplishment is shared by the entire family and not just as an individual performing at work. The success of a family business will be enjoyed beyond the business itself.'

54

Simon and Lynette Westgaard (New Zealand)

Another best practice from Down Under. What started with one man, a truck and a big mobile phone 30 years ago is today a 100% family owned and operated business handling 50 000 tonnes of materials with the ambition to ramp up to 100 000 tonnes in the coming years. Business is challenging, with steel scrap pricing going up and down. 'We are lucky to have a new powerful shear to convert materials into cashflow every day.' Running a family business sometimes feels like one big adventure: 'You all get excited with new developments and . It's fantastic to have the next generation bring their ideas and energy to the table.'



55

Wareerath Akkalatham (Thailand)

Akkalatham is a tough businesswoman who started her own scrap metal company Trident Steel near the Thai coastal town of Pattaya. Her company operates at two locations that rely on a mix of Asian and European shearing, baling and handling equipment. Akkalatham says she keeps her eyes wide open to follow trends in the global market and has invested in proven solutions developed by Italian firm Danieli. This equipment will help expand Trident Steel's operations in the coming years.

56

Mir Mujtaba (UAE)

Mujtaba is a well-known figure in the global scrap metal scene. More than 30 years ago, he moved from India to Dubai to start his own scrap business sourcing the Middle East and north-east Africa and selling to end-users across India and beyond. In the past three decades, the entrepreneur and owner of Jupiter Metal Trading has seen the Gulf region develop into a major economic hub attracting investors from around the globe. Mujtaba has seen ups-and-downs with, unsurprisingly, 2020-21 being a significant 'down' due to the pandemic. Mujtaba is president of the Bureau of Middle East Recycling.

57

Giulio Airaga (South Africa)

The youngest member of the Airaga family (right) took over the business from his father last summer. He joined the e-scrap recycler in Johannesburg in 2015, serving as marketing manager. His mission was clear: to future-proof the company. This took him to many TV and radio studios, earning the nickname 'The Voice of Desco'. Airaga, who effectively grew up on site, says he owes a lot to his father, Costa. 'From a young age he told me: "My ceiling is your floor". His reasoning is, I've brought you to this level, now you've got to take it from here to reach new heights.'



58

Adam Minter (USA)

Minter comes from a Minnesota scrapyard family and has made it his life's work to document the ins and outs of the global recycling industry. Having lived in Singapore for years, he is very familiar with developments in the Asian market. Minter writes articles and columns for Bloomberg and travelled the world for his best-seller 'Junkyard Planet'. The book was followed by 'Second Hand, Travels in the New Global Garage Sale.'



59

Brandi Harleaux (USA)

Harleaux took over the family business South Post Oak Recycling in Houston, Texas having learned about buying and processing ferrous and non-ferrous metals from her parents, who started the company in 1994. She returned to the company ten years ago after a detour: studying psychology and analysing leadership DNA of successful organisations. After getting her PhD, she was hired to boost business development at Walt Disney. She is now applying her know-how to the world of scrap. This was cemented by being chosen as ISRI's director at large and winning the Houston International Trade Development Council's 2021 Rising Star Award.

60

Johanna Leshabane (South Africa)

The South African entrepreneur describes Bophelo Recycling as a ‘waste buy-back centre’ that collects recyclable PET plastic from settlements, households and schools in the Ermelo region. Leshabane built her business from the ground up and now has over a dozen full-time staff and 20 part-time waste pickers. The company has collected over 45 tonnes of plastic scrap since it launched in 2017 and the founder cites a 79% increase in collection volumes since it opened its doors.

62

Petra Zieringer (Germany)

As president of Germany’s association of metal traders VDM, Petra Zieringer represents the broader interests of the national metal scrap scene. But at home in Bensheim near Frankfurt she focuses 100% on her own cable recycling business. Petra Zieringer is the third generation of her family to lead Zirec, which has a EUR 100 million-plus turnover and processes 28 000 tonnes of (mainly) industrial cables per year. Being a family business makes it easier to deal with challenges, she believes. ‘For example, it’s always a short decision-making process and the decisions are not necessarily money-driven. Another advantage is that she feels close to her workforce. ‘Employees are treated like family members.’



61

Mike Webster (Indonesia)

A visit to a landfill site in the early 90s filled Mike Webster with both horror and fascination and he has been working ever since to grapple with what he calls ‘the global waste emergency’. He is currently involved in the Stop Ocean Plastics (STOP) platform which helps cities and communities in south-east Asia, mainly in Indonesia, combat marine plastics. Since its launch in 2017, the STOP programme has brought reliable waste management services to more than 260 000 people in three cities in Indonesia, built five waste processing facilities, and helped prevent more than 20 000 tonnes of waste (including 2 350 tonnes of plastic) from leaking into the environment.

63

Nanne Fioole (The Netherlands)

Recycling mattresses is a far from sleepy business for the owner of Retourmatras. This company processes almost two-thirds (or 950 000) of the 1.7 million mattresses that are disposed in the Netherlands each year. A recent focus is turning them into new products rather than sorting and baling scrap components for export. A new processing facility, one of four locations in the Netherlands operated by Fioole, was launched in 2021 to recover metals, textiles, latex and polyurethane foam. An estimated 90% of these materials goes into the production of new mattresses. RetourMatras has established partnerships with Ikea and Renewi and is looking to take the concept to other countries.

64

Ibrahim Aboura (UAE)

The third generation to lead the Aboura family business. With seven yards handling some 150 000 tonnes of non-ferrous scrap per year, Aboura Metals is one of the biggest businesses of its kind in the Middle East. The company operates facilities and yards in Jordan, Egypt, UAE and Saudi Arabia and has trading hubs in Kuwait, Lebanon and Sudan. Ongoing disruption in the global supply chain and logistics, the recent slowdown of global growth and industrial sectors, and the volatility of metal prices are his biggest concerns. Meanwhile, the Aboura family continues to invest in people and tools by expanding its operations, adding new furnaces for its aluminium alloy production and furnaces for copper, along with new cable shredding machines to increase capacity.

65

Tim Rademacker (Germany)

Big companies are getting more involved with recycling and Mitsubishi is a good example, having set up Mitsubishi Chemical Advanced Materials in Germany to work out the best way to recover carbon fibre. Rademacker has been leading this niche venture as general manager since 2011. He oversees the pilot plant that has been constructed in Wishhaven which boasts an innovative recycling line combining pyrolysis and shredding to yield a carbon fibre and polypropylene blend called CFK. ‘It contains 35% recycled content, a great starting point for such a complex material,’ Rademacker says.



66

Nancy Gillis (Switzerland)

Gillis is an expert on sustainable supply chains, regulatory compliance and business strategies. When asked about her mission, her answer is direct: 'I am committed to leveraging sustainability to reduce enterprise risk, maximise business value and foster innovation.' Besides being a respected speaker at recycling events, she served as ceo for the Global Electronics Council for six years before joining the prestigious World Economic Forum. There, she is leading the Climate Action & First Movers Coalition, ensuring that circular economy best practice get the attention it deserves in the public eye as well as political circles.

67

Sophie Walker (UK)

The co-founder and ceo of Dposal has a reputation for being a 'waste crime fighter'. 'Tech and business have such an incredible potential for doing good in the world but often don't.' Her mission is to change this by creating, as she calls it, 'a collaborative ecosystem of organisations that care about sustainability and monitor their waste stream'. Walker's expertise includes business development and conflict resolution and both have supported her career in the highly competitive scrap industry. Amongst her most recent accolades is taking home the Innovate UK's 2021 Women in Innovation award.



68

Johan van Peperzeel (The Netherlands)

Van Peperzeel is a Dutch battery recycling pioneer who owns the largest battery recycling facility in the country, which he started more than three decades ago. He loves technology and has been fine-tuning a solution to combat electric vehicle fires for the last few years. Having endured a fire at his own site, this battle against the flames is a very personal one. He is a popular panellist at events where he speaks out on the urgent need for practical ways to make transport safer and the proper labelling of dangerous and hazardous goods.

69

Michael Braungart (Germany)

Braungart is sometimes called the godfather of the circular economy. He wrote the essential book on the cradle-to-cradle concept in 2002 with his business partner William McDonough. Recycling International had the pleasure of interviewing him before his idea went 'viral', ultimately resulting in the launch of the Cradle-to-Cradle Products Innovation Institute. Its Certified Products programme is rapidly becoming the world's best recognised framework for assessing, optimising and verifying sustainable product design and manufacturing.

70

Jacqueline Lotzkar (Canada)

Lotzkar has become a driving force behind the family business Pacific Metals International which was launched by her great-grandfather Leon in 1912. She started out as a trader in 2014 and rose through the ranks serving in various HR and consultancy roles. Lotzkar is a well-known advocate for family businesses in North America and for women in the recycling industry. 'In the last 12 months, our company invested in building a new facility and moved off our previous site which we'd operated on for over 60 years. Our new site increases our footprint by 50% and moves all our non-ferrous operations indoors.'





71

George Voyatzis (Greece)

Voyatzis is general manager at Anamet Recycling, based near Athens. He is always happy to share insights on how scrap markets work. Business is good at Anamet but concerns and challenges lie ahead. 'First, regulatory requirements arising from the waste status of metal scrap make handling increasingly complicated. Secondly, soaring energy costs have resulted in higher production and transportation costs. Thirdly, the disrupted supply chain around the world remains a challenge.' Surviving in this business is a daily struggle, says Voyatzis. 'According to Darwinism, survivors are not necessarily the strongest but they are those who can adapt successfully to an ever-changing world.'

72

Pascal Leroy (Belgium)

Leroy has overseen operations of the WEEE Forum since 2007. Besides writing papers on e-scrap and battery recycling, he has also supervised the innovative research and development Weelabex project, funded from the EU's Life programme. Leroy's efforts have been mainly geared towards fostering understanding between the many different stakeholders in the recycling sector, creating a European standard of excellence for e-scrap recycling and promoting extended producer responsibility schemes. He believes that blockchain technology will 'push the boundaries' of electronics recycling.

73

Rosemary Sutton (Canada)

Sutton was appointed executive director at Tire Stewardship British Columbia nearly ten years ago. Under her leadership the organisation, which celebrates its 30th anniversary this year, has vastly improved tyre recycling schemes. Sutton reports that more than 100 million end-of-life tyres have been recycled in British Columbia since the stewardship's operations began. 'Today, more than five million scrap tyres are recycled every year into new, durable, and environmentally friendly products, re-purposed within the province,' she says.

74

Lisa O'Donoghue (Ireland)

This widely published researcher is taking on liquid crystal displays (LCDs) with her company Votechnik. 'Around 200 million TVs and 120 million computer monitors are sold globally every year,' O'Donoghue points out. 'That's why I want to create automated plants to dismantle and depollute flatscreens.' Her solution, the ALR4000 system, can currently process more than 60 LCD, LED and PC monitors per hour. O'Donoghue's company is a spin-off inspired by her work as a materials scientist at the University of Limerick. Votechnik celebrated its tenth anniversary last year.



77

Muhammad Soefihara (Indonesia)

In 2021, Indonesia generated two million tonnes of e-scrap of which only 5% is properly processed, estimates the co-founder of a pilot facility on Java which has been hailed as a source of inspiration for future electronics recycling across the archipelago. The plant near Jakarta recycles printed circuit boards through mechanical and hydrometallurgical processes, followed by smelting to recover precious metals. It also builds awareness around recycling and is intended to lead the way in proper e-scrap recycling.



75

Carmen Ene (Finland)

Ene is a firm believer in the digital transformation of the recycling sector. She describes electronics as a 'sustainable business asset' but one that must be activated. In her role as the ceo of e-scrap consultancy platform 3stepIT, Ene helps businesses deal with IT equipment more sustainably. She also leads a joint venture with BNP Paribas described as 'an alliance promoting our technology lifecycle management solutions across Europe'. She believes recyclers want to do better but don't always know where to begin. 'After all, you cannot manage what you cannot measure.'

76

Thomas Holberg (Germany)

Holberg leads battery recycling initiatives at TES. The company uses proprietary in-house technology to recover nickel, lithium and cobalt from car batteries. In his position as global vice president battery solutions, he is closely involved with the new site being built in Rotterdam, the Netherlands. Holberg proudly states the facility will have the capacity to treat 10 000 tonnes of battery metals per annum once it opens in late 2022.

78

Carlos Ludlow-Palaflox (UK/Mexico)

Mexican entrepreneur Ludlow-Palaflox is determined to boost the recovery of laminated packaging through chemical recycling and is on the path to achieving a lifetime goal to take his patented technology back home. Until a recent deal with Nestle, Greenback Recycling and Ludlow-Palaflox's company Enval, Mexico had none of the extended producer responsibility schemes seen in western Europe. My personal mission is to make Enval a commercial success and, through Enval, to show that pyrolysis is a waste management solution but not the waste management solution.'

79

Jim Puckett (USA)

Puckett is founder of the Basel Action Network (BAN) and a well-known industry advocate and public speaker, focussing on topics such as hazardous waste regulations, international trade and e-scrap and ship recycling. BAN is an industry watchdog, regularly conducting surveys and track-and-trace projects to map the controversial flow of exported waste. With a background at Greenpeace, Puckett is also a consultant for influential organisations like the World Economic Forum and he uses his platform to inform citizens about recycling statistics and challenges.

80

Olivier Mbera (Rwanda)

Promising recycling practices continue to pop up across the African continent, such as in Rwanda, a country that presents itself to the outside world as modern, efficient and above all Africa's e-scrap recycling role model. With more than 7% GDP growth year-on-year since 2000, the tiny Central African nation has seen electronics use increase from 33 000 tonnes in 2014 to almost 50 000 tonnes in 2020 and it is projected to hit 300 000 tonnes by 2050. 'Clearly, this is offering huge potential for electronics recycling,' says Mbera, who leads the Enviroserve Green Park facility, set up by the Rwandan government in partnership with a local subsidiary of Dubai-headquartered electronics recycler Enviroserve.

81

Stephan Karle (Germany)

Karle is an advocate of handling scrap as locally as possible. 'Why ship high quality stuff across oceans to faraway places when you can sell locally at almost the same price and sometimes even better?' Karle leads the Karle Recycling business of Stuttgart. On a yearly basis, the company processes some 400 000 tonnes of scrap, including metals. On average, half of the ferrous and non-ferrous scrap is exported to smelters in Luxembourg and Italy while the rest remains in Germany.

82

Marius Costache (Romania)

Costache is general manager at Greenweee, a leading e-scrap recycling company in Romania. Greenweee was founded in 2009 and has two facilities, one at Buzau and another at Campia Turzii. Recently the company announced plans for a third plant and total investment amounts to EUR 10 million.



83

Gary Giles (UK)

Giles founded Ogel, a start-up that recycles plastic scrap into flood prevention systems and mobile spaces such as offices. He pitched his innovative idea on the hit TV show Dragon's Den and the judges were so impressed they offered £50 000 in funding to help bring Ogel to market. Today, Giles is running a recycling workshop in the UK to produce interlinked panels made from 100% recycled polystyrene. 'They cannot rust and are thick enough not to degrade or crack,' he says. Momentum is on his side, with Giles being nominated in two categories of the Great British Entrepreneur Awards.



84 Sally Houghton (USA) Following a career in education, Houghton found her calling at the Plastic Recycling Corporation of California. After 16 years, she was appointed executive director in 2021. Houghton also has an important voice at the Bureau of International Recycling where she serves on the plastics committee. She wants the current collection infrastructure to be modernised and an end to 'outdated' bottle bills in the US. 'Legislators don't understand the industry and the complexities of successful recycling. Rather than take the time to do a deep dive and educate themselves, they tend to pander to public opinion and perceived environmental fixes.'

87 Miranda Wang (USA) Wang started Novoloop straight out of college together with her best friend Jeanny Yao. Their breakthrough accelerated thermal oxidative decomposition technology which harvests carbon-rich feedstock from polyethylene scrap to produce high performance materials that rival virgin plastic. 'Our flagship product XIRC contains up to 50% post-consumer recycled content.' Novoloop raised US\$ 21 million in 2022 to achieve one tonne in the pilots and to target the footwear market.

85 Emmanuel Katrakis (Belgium) EuRIC's secretary-general is doing a great job to further the interest of Europe's broad recycling sector. Launched in 2014, the umbrella organisation represents the interests of more than 5 500 recycling companies together generating an annual turnover of around EUR 100 billion. In June, the lobby platform held its annual conference in Madrid, the first physical event since the outbreak of Covid.

88 Orbay Simsek (Turkey) The global ship dismantling sector is thriving, despite economic challenges. Simsek affirms that his business, Simsekler Ship Recycling, has made many new deals, securing healthy growth. With the global tourism industry in deep crisis because of the pandemic, more redundant passenger cruise vessels than usual are arriving on Turkey's west coast to be scrapped. The company was among the lucky ones to benefit. This trend is slowing somewhat, although there is still plenty of tonnage to scrap.

86 Ibukun Faluyi (Nigeria) Faluyi is executive director of Epron, the first organisation to promote responsible e-scrap recycling in Nigeria. 'I want to get producers in my country to accept extended producer responsibility schemes. It's a challenging mission but it's going well. We have seven big brands and three recyclers on board now.' The renewed focus on the electronics waste stream enables Epron to process 300 tonnes of material annually. 'We have trained a lot of people, including government officials, so we can expand our operations. My team and I have big plans for next three years.'



89 Esethu Cenga (South Africa) Cenga is a proud textiles recycling pioneer active in the Cape Town area. Rewoven, which she launched in 2018, creates quality fabric from recycled textile waste diverted from landfill. The company collects off-cuts generated by clothing manufacturers in the production process, sorts and processes them into fibres which are then re-spun and re-woven. 'Our recycled fabric is the same quality as that of virgin cotton.'

90

Teng Shen (UK)

Driven by China's scrap import ban, Chinese investors have been developing new scrap processing plants elsewhere in South East Asia and in North America and Europe. Teng founded Oso Polymers, based in Leeds, and gained a reputation for being the UK's first Chinese-owned recycling operation. The pellets produced in Leeds are shipped to China to make new plastics. Establishing OSO Polymers to manufacture pellets in the UK was an obvious development: 'We saw the opportunity because China shut the market.'

91

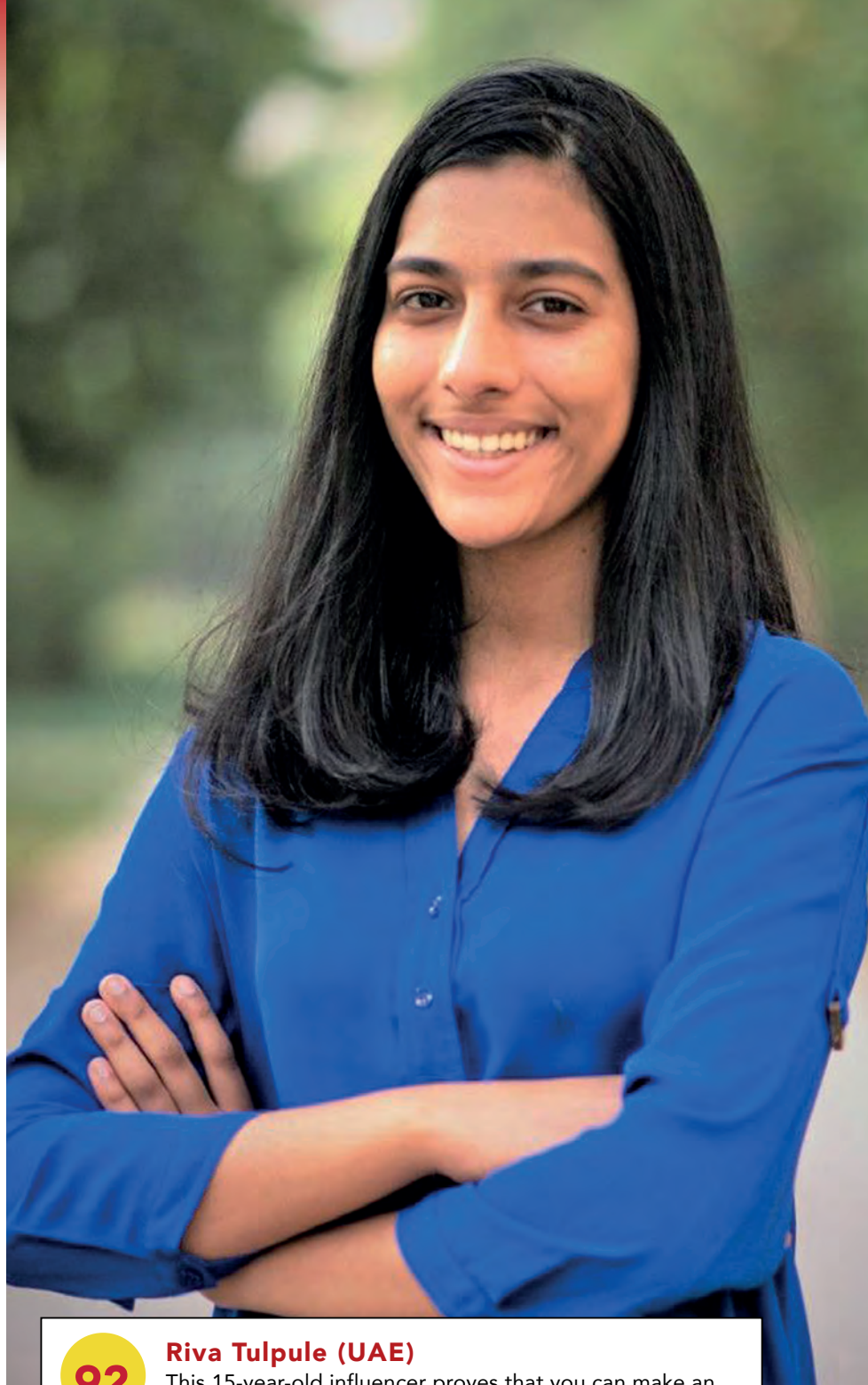
Sanjay Mehta (India)

Metal recycler and recycling industry ambassador. In his role as president of the Material Recycling Association of India, Mehta has recently addressed the trade body's growing concerns about the e-scrap mountain in his country and the lack of a proper collection and recycling infrastructure. India is the third-largest producer of e-scrap after China and the US and more than 95% of this waste is handled by what is often called 'the informal sector'.

93

Elin Beate Saltkjel (Norway)

When it comes to sustainable ship recycling, Saltkjel is the one to talk to. Thanks to her background in marine technology, she has a practical understanding of modern vessels. At Grieg Green, she became a specialist in life cycle assessments, hazardous waste analysis and legislation. Her expertise has assisted many recyclers to find the right partner to scrap decommissioned ships. This vision helped her team win the World Maritime Forum's 2022 Environment Protection Award.



92

Riva Tulpule (UAE)

This 15-year-old influencer proves that you can make an impact at any age. Tulpule launched an e-scrap collection project with EnviroServe and recovered 25 tonnes in 2020 and 2021. Eager to declutter when she moved into a new home four years ago, she rallied friends and family members to donate old mobile phones, laptops and other equipment for recycling. That collective effort racked up more than 2 000 used devices. She reached out to EnviroServe, which processes around 40 000 tonnes of e-scrap annually, to spread the recycling message. Her efforts as 'young change maker' earned her the Princess Diana 2020 Award.

94

Dotan Kabak and Dan Halman (Israel)

These gentlemen are behind the EUR 7 million Electra Recycling facility to start production in the second half of 2022 at Sredot in the south of Israel. The facility is to process fridges and aircons and is seen as a project that Israel has been waiting for because it lacks a modern infrastructure for fridge and aircon recycling. With a population over nine million, some 300 000 fridges and 700 000 aircons are sold every year. 'We have long and hot summers so you need air conditioners in homes and offices - everywhere. On average, every household has three units.'

95

Leonardo Gasparini (Brazil)

Gasparini runs the start-up SunR, which specialises in recycling end-of-life solar panels. The ceo wants to put Brazil on the map when it comes to the proper handling of photovoltaic systems. 'I read market reports predicting that, in 30 years, Brazil will be the biggest PV waste generator in Latin America. This means we have to do something today.' SunR has processed 30 tonnes of discarded solar panels since launching its recycling services in 2020 and Gasparini expects to hit 125 tonnes by the end of the year. The potential is great, he says, putting the market value of the material of installed capacity at EUR 17 million.



96

Mathilde Taveau (Belgium)

The young engineer has become a legislation specialist at trade organisation Plastics Recyclers Europe, following her work at electronics recycler Coolrec. She knows plastics inside and out and has a particular interest in e-scrap plastics, post-shredder residue and additives. She lends her expertise to research projects such as PLAST2bCLEANED which aims to develop an eco-friendly and economically viable recycling process for e-scrap plastics. Her most recent work is on the EU-funded Primus project, seeking to advance recycling technologies of common polymers.

97

Iker Negrete Neila (Spain)

Neila is a proud scrap trader at Metales Unzueta, one of the biggest non-ferrous recyclers in northern Spain and a good example of a recycling company that anticipated China's import restrictions at an early stage. While exports to China fell by 50%, Metales Unzueta invested heavily in new equipment to improve sorting and boost scrap quality. Brass scrap is a major focus and the company handles more than 2 000 tonnes of shell casings per year, sourced from hunters in Spain and abroad or used in military exercises in South America and the Middle East.

98

Marcos Fonseca (Brazil)

The second Brazilian in the Top 100, Fonseca is commercial director at RFR Recycling in Sao Paulo, one of the biggest metal recyclers in Brazil, handling some 600 000 tonnes of ferrous scrap per year. Fonseca used to export a lot of scrap but now, with higher prices and strong demand from local steel mills, most materials stay in the country. Fonseca is constantly looking for new business opportunities and is eager to learn about tools and solutions for improving operations at RFR's yards.

99

Doug Kramer (USA)

As with so many recyclers, the owner of Los Angeles based Kramer Metals and Spectrum Alloys has seen the impact of Covid close up. 'The world has shut down,' the former ISRI chair lamented to Recycling International at the time but he has remained optimistic about the future and Kramer Metals has proved to be resilient. 'Although the uncertainty of how long this will take hurts, I believe we will be OK and our business will survive this crisis.' The company, as with the entire scrap recycling industry across the US and worldwide, was considered part of an essential sector.





100 **Ninoslav Milenkovic (Serbia)**
Managing director at E-Reciklaza (left), one of the largest electronics recyclers in the Balkans. Every year, some 125 000 discarded fridges go through the company's shredder in Nis in southern Serbia. E-Reciklaza has two shredder lines, a large one for fridges and another for smaller devices. The company processed 17 000 tonnes of e-scrap in 2021 and expects to increase volumes towards 20 000 tonnes by the end of this year. Milenkovic is looking for partners to join him in setting up new recycling businesses. 'Not only in Serbia; we're also interested in other European countries and markets - and even North America.'