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# GLOBAL RECYCLING

*The Magazine for  
Business Opportunities  
& International Markets*



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## Recycling Provides Raw Materials

From 13 to 14 September this year, the "ChinaReplas2018 – China Recycling Plastics Conference/Exhibition" will take place in Dongguan (Guangdong Province, South China). According to the exhibition company Beijing Guojia Jiye Information and Consultation Company Ltd., the event will focus on five major areas: "Southeast Asia Recycling Plastics Supply", "Global Scrap Plastics, Procurement of Recycling Materials", "The Plugging-ins between outbound Investments and Target Resources", "Establishment of Global Operation Facilitation and Mutual Assistance Platform", and "International New Technologies and New Equipment". Invited are representatives of industry sectors regarding plastics.



Exhibition and conference visitors can feel certain that one of the event's topics will be the Chinese import restrictions regarding waste materials. The People's Republic of China is transforming itself from being the world's largest importer of scrap plastics to the largest recycled plastics market, the Chinese exhibition company gave account in the news section of the event's homepage. The background of the policy: The Chinese government stated that imported garbage would pollute China's environment and thus decided "to dispose of its own garbage by itself". In July 2017, the document of China's waste import reform was released, and the bans started in 2018. According to the website, the inspection of imported recyclables became stricter since February and hindrances occurred during the customs clearance: a part of the plastics material was identified as waste, rejected and returned, because it did not meet the requirement of "Three Conformities", which means "consistent in packaging, color, size and shape". In the interim, Chinese companies invested in recycling capacities abroad; the granulation capacity is estimated to exceed 10 million tons. The bulk of the material will be shipped to China – and be used as a secondary raw material for the industry.

In many countries of the world investments in waste and recycling technology are also rising. According to a new study, the world will be generating an estimated amount of 53.9 million tons of e-scrap by 2025 (page 4). Recycling will be a big business, as the recycled raw materials are used in industrial production processes. In the European Union, the European Parliament and the European Council adopted a waste package, which sets out new rules for waste management and establishes legally binding targets for recycling to make the circular economy a reality (page 16). In European countries like Greece (page 18) as well as Ireland (page 22), recycling is gaining momentum, while the Basque Country is on its way to becoming a European reference region in the circular economy (page 26).

There are also investments in Eastern European countries: One example in this regard is the Republic of Moldova, where public financiers and an international donor intend to realize the Chisinau solid waste project (page 24). The same applies to Central Asia: In the Republic of Kazakhstan's capital Astana the construction of a recycling plant is planned; the project will be implemented at the expense of foreign investors (page 9).

We hope you get a lot of new and useful information from reading this current magazine.

Yours

Brigitte Weber (weber@msvgmbh.eu)



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## The Sector and the Investment Plan for Europe

The Investment Plan for Europe, the so-called Juncker Plan, has three objectives: to remove obstacles to investment; to provide visibility and technical assistance to investment projects; and to make smarter use of financial resources.

The three elements of the plan are:

- First, the European Fund for Strategic Investments (EFSI), which provides an EU guarantee to mobilize private investment. The Commission works together with its strategic partner, the European Investment Bank (EIB) Group.
- Second, the European Investment Advisory Hub (☞ <http://eiah.eib.org/>) and the European Investment Project Portal (☞ <https://ec.europa.eu/eipp/desktop/en/index.html>) which provide technical assistance and greater visibility of investment opportunities, thereby helping proposed investment projects become a reality. The Hub is a joint venture with the EIB Group.
- Third, improving the business environment by removing regulatory barriers to investment both nationally and at EU level.

### EU action plan for the circular economy

EU Cohesion Policy supports sustainable growth by promoting water and waste management as well as environmentally-friendly and innovative clean technologies, to name but a few. Through these investments, funds play an important role in boosting the implementation of EU environmental policies, according to the EU website.

The transition to circular economy will be supported financially by the European Structural & Investment Funds (ESIF). As reported by the European Commission, this financial instrument includes investing in the needed infrastructures for wastewater treatment and waste management (such as recycling), but also measures to monitor the state of the environment or developing green infrastructure. "In doing so, the environment represents a source of economic growth and new job opportunities."

Regarding water management, to which about 15 billion Euro is allocated, the largest share of the available budget will go to wastewater treatment infrastructure in the Member States that still need to fulfill basic needs in this area, the commission describes the targets. The budget includes the construction or upgrading of wastewater treatment plants and sewerage networks, but also sewage sludge management. Further investments will contribute to the availabil-

ity and security of drinking water services and to water management and conservation including water reuse.

As reported, about 5.5 billion Euro are allocated to improved waste management, including basic waste treatment infrastructure in the regions with basic needs. "These investments are in line with the waste hierarchy and based on national and regional waste management plans," the information says. In addition, Cohesion Policy invests in innovation and supports small and medium-sized enterprises (SMEs) to help achieve the objectives of a circular economy. In the investment framework for 2014-2020, there is significant funding for waste management and support for the circular economy in innovation, SME competitiveness, resource efficiency and low-carbon investments. For these, financial resources amount to a total of 150 billion Euro. The Open Data Platform features the planned investments (☞ <https://cohesiondata.ec.europa.eu/>).

Interested investors can find open and upcoming calls for funding proposals, get background information on funding processes and programs, and apply online. Information about the tendering process and opportunities for doing business with the European Commission is available at:

☞ [https://ec.europa.eu/info/funding-tenders\\_en](https://ec.europa.eu/info/funding-tenders_en)

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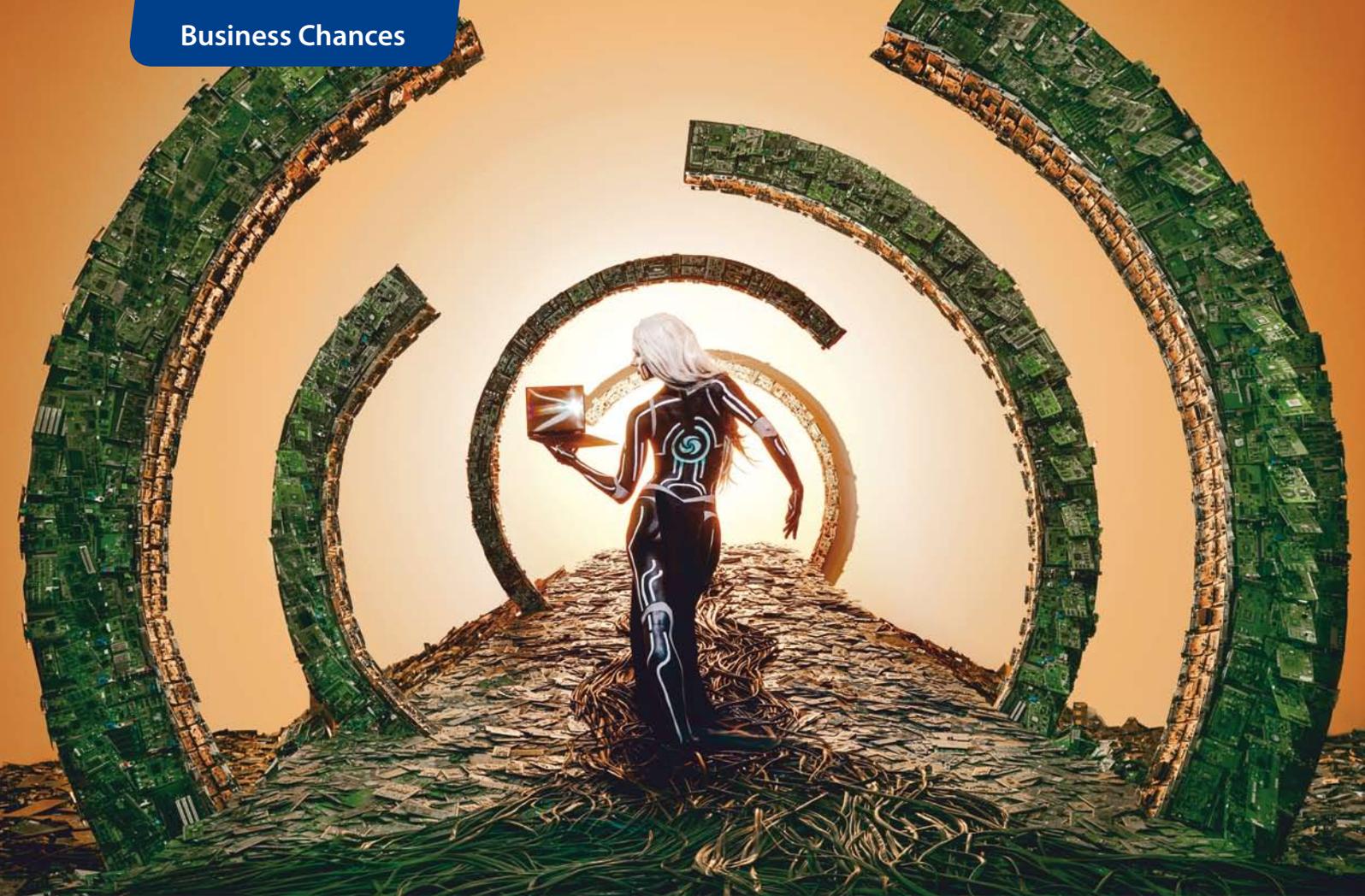
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# New Statistics on Global E-Scrap Quantities: A Big Business

The Bureau of International Recycling (BIR) commissioned a new report, which was published at the world recycling organization's latest convention, held in Barcelona in May this year.

**E**nd-of-Life electrical and electronic equipment (EoL-EEE) is currently considered to be one of the fastest growing waste streams worldwide, growing at three to five percent per year, especially in the member countries of OECD (Organization for Economic Co-operation and Development) where markets are saturated with huge quantities of electrical and electronic goods, the authors of the study informed. The report, entitled "Statistics on the national arisings of e-scrap and the movement of e-scrap between countries", concludes the most recent data, although "good quality data are only available for a limited number of countries. Moreover, differences in the definitions, the range of e-scrap categories reported, the methodologies used and the year of data reference, severely restrict the possibility of meaningful comparisons and data aggregation in wider geographic regions." In this context, the BIR E-Scrap Committee has decided to produce a definitive set of statistics on the national genera-

tion of e-scrap, both UEEE (used electrical and electronic equipment) and EoL-EEE, and their movement between countries, including reuse and recycling data, based on all relevant data from already published studies and other data sources, the authors emphasized.

The report – commissioned by BIR's E-Scrap Committee – was conducted by a team of experts at the Harokopio University of Athens, led by Professor Katia Lasaridi. Their evaluation of real data and extrapolation of figures from around 180 countries indicate that global e-scrap generation is set for "a more than 30 percent increase in less than a decade", the BIR informed in a press release.

## The findings

In 2016, e-scrap generated worldwide amounted to 41.2 million metric tons. This amount included 25.4 million

## Information about the Artist and the Subject

With his “hyper-real sculptures” made out of old electronics Benjamin Von Wong wanted to raise awareness about the growing e-waste problem – and cooperated with American computer technology company Dell, which runs a recycling program regarding e-waste in more than 80 countries. Von Wong was given 4,100 pounds (1.8597 tons) of e-waste to build the sculptures, the approximate amount of electronic waste generated by an American in a lifetime. The sculptures – built with simple tools, paint and wood – were created at a facility of Dell’s recycling partner in Dallas by 50 volunteers over a stretch of ten days and were only kept up for a single day before being returned for recycling. The photos were published in March this year.

➔ <https://blog.vonwong.com/dell/>

tons large household appliances (e.g. washing machines and freezers), 4.9 million tons small household appliances (e.g. microwaves and vacuum cleaners), 6.7 million tons information and communication technology (ICT) equipment (e.g. PCs and mobile phones) and 4.2 million tons consumer electronics (e.g. television sets, video cameras). According to the study, this corresponds to 5.6 kilograms per inhabitant. These figures vary by region: The spectrum ranged from 1.5 kilograms per inhabitant in Africa to 21.9 kilograms/inhabitant in the USA and Canada.

According to the study, the world will be generating an estimated amount of 53.9 million tons of e-scrap by the year 2025 – equivalent to an annual growth rate of over three percent. It is estimated that the fastest growth is likely to be seen in the Asia-Pacific region where the generation of e-scrap is expected to surge from 3.6 kilograms per inhabitant in 2016 to five kilograms nine years later.

Over the years from 2016 to 2025 – and when taking into account rising population – per capita generation of e-scrap is forecast to climb around 20 percent worldwide from 5.6 kilograms per year to 6.7 kilograms. In addition to the Asia-Pacific region, generation growth is predicted for all other regions of the world: from 1.5 to 1.8 kilograms in Africa, from 9.7 to 11.9 kilograms in Eastern Europe, from 6 to 6.8 kilograms in Latin America and the Caribbean, from 21.9 to 24.1 kilograms in the USA and Canada, and from 20.2 to 22.6 kilograms in Western Europe and others, BIR reported.

In pure volume terms, the Asia-Pacific region is already the world’s largest generator of e-scrap with a total of 15.9 million tons in 2016; this figure is expected to soar to 23.7 million tons by 2025. “This is more than double the estimate for the second-largest generating region, namely Western Europe and others, whose total is forecast to climb from a fraction under nine million tons in 2016 to more than 10.2 million tons nine years later,” the world recycling organization stated.

“The total quantities of e-scrap arisings are on an upward trend across the globe with a very strong indication that this trend will continue unabated for some time due to the emergence of innovative technologies and more affordable electronics,” BIR cited the report’s authors. “Taking into account the population size and current low generation per inhabitant in the Asia-Pacific countries, one can conclude that the future increase of e-scrap would mainly be derived from these nations and to a lesser extent from Africa.” The study would highlight the challenges and opportunities relating to e-scrap and provide a baseline for the recycling industry and policy-makers “to plan effective actions to capture the e-scrap potential for contributing to Circular Economy goals”. As reported by BIR, they also call for standardized methods and techniques to facilitate realistic measurement of the amounts of e-waste generated in different countries.

➔ [www.bir.org](http://www.bir.org)

## E-Scrap and the Chinese Situation

Faced with China’s import ban on plastics scrap, processing operations have been moving to South East Asian countries such as Thailand, Malaysia and Vietnam. However, these nations are also sharpening their focus on environmental controls, Dr. Steve Wong of Fukutomi Co. Ltd and the China Scrap Plastics Association told the BIR E-Scrap Committee meeting in Barcelona.

The Committee’s Chairman Dr. Thomas Papageorgiou of Anamet SA in Greece agreed that China’s change of approach to mixed plastics and mixed metals had “affected the business significantly”, creating “a challenge and an opportunity” for the industry in Europe where many investments in new capacity and output improvements were being seen. He described himself as “very optimistic” about prospects for Europe.

According to Surendra Patawari Borad of Gemini Corporation, recent key developments in India had included a potentially “game-changing” shift in rules governing the importation of second-hand goods for repair, re-engineering and refurbishment and an amendment of the country’s e-waste rules to establish a collection target for producers of ten percent for e-waste generated, rising by ten percentage points every year to 2023. With India projected to generate around three million tons of e-waste in 2018, he suggested e-scrap processing would become “a big business” in the country.

## Germany: GreenTech for Sustainable Development

The German Federal Environment Ministry presented the “GreenTech Atlas 2018”.

In the view of the ministry, this publication confirms that green products and services are on the rise with a global market volume of 3,200 billion euros in 2016. This share is likely to increase by 6.9 percent annually to amount to 5,900 billion euros in 2025. As reported by the consulting firm Roland Berger – which analyzed and assessed international and national environmental technology and resource efficiency markets and conducted the survey – German enterprises have in total a 14 percent share in the global market for environmental technology and resource efficiency.

Projections predict an annual average market volume increase for Germany’s green technology sector of 8.8 percent up until 2025. German environmental standards, the early start on a course to energy transition and the great awareness of German companies for energy and resource efficiency have been instrumental in establishing this high demand. Against this backdrop green technology will also become a driver for jobs. Companies active in the six lead markets (energy efficiency, environmentally sound production, storage and distribution of energy, circular economy, sustainable mobility, sustainable water management, raw materials and general materials management) already employ

1.5 million people – and the numbers are rising. The Federal Environment Ministry is placing an increasing emphasis on environmental innovation.

### Waste management and recycling

Within the wider sphere of environmental technology and resource efficiency, waste management and recycling is the leading market with the smallest volume. According to the information, the global sector is anticipated to soar from 110 billion Euro (2016) to 210 billion Euro in 2025; in Germany alone, this sector is predicted to grow from 20 billion Euro (2016) to 32 billion Euro in 2025.

According to the publication, emerging countries, in particular, have a lot of ground to make up in the area of waste disposal. “For example, the environmental policy goals laid out in China’s 13th five-year plan feature a program of actions to control air, water and soil pollution that include improvements in the treatment of waste. India, too, plans to tackle the subject of waste treatment and disposal with greater vigor, especially in relation to the recycling of scrapped electrical equipment, paper and plastics and the disposal of hazardous waste.” Above all, India is looking to investment by private enterprise.



Source: BMU

“Compared to the green tech industry as a whole, growth in the lead market for waste management and recycling is slightly above average at 7.4 percent,” the information provided in the “GreenTech Atlas 2018” says. “This dynamism is injected first and foremost by the market segments for mechanical recycling and feedstock recycling.”

The fifth environmental technology atlas for Germany takes stock of the sector and examples showcase GreenTech made in Germany. “For the technology and industrial location Germany, the importance of environmental technologies cannot be overestimated,” the ministry emphasized. “Their share of the gross domestic product was 15 percent in 2016 and – according to the forecast – will rise to 19 percent by 2025.”

➔ [www.bmu.de/en/publication/greentech-made-in-germany-2018-environmental-technology-atlas-for-germany/](http://www.bmu.de/en/publication/greentech-made-in-germany-2018-environmental-technology-atlas-for-germany/)

## The Green Bond Opportunity

According to the Bank of New York Mellon Corporation (BNY Mellon), the global green bond market continues to see significant growth; it is also attracting a larger and wider issuer base.

This progression reflects 155.5 billion US-Dollar in labeled green bonds, “incorporated into a larger 895 billion US-Dollar universe of climate-aligned bonds that contribute to a low-carbon economy,” the financial institution gave account.

As reported, the proceeding use of green bonds shows how issuers are raising capital to conserve energy and resources, transform transportation

systems and protect water, land and forests. “These investments also offer the opportunity for investors to support society’s transition to a more sustainable future while generating financial value,” BNY Mellon said. “However, no single agreed definition of ‘green’ yet exists, creating a market challenge.”

BNY Mellon, which delivers investment management and investment services in 35 countries and more

than 100 markets, is, by its own account, committed to fostering the integrity and strength of the market to help clients mobilize investment capital toward their sustainable financial objectives.

An infographic on green bonds can be downloaded at ➔ [www.bnymellon.com/us/en/\\_locale-assets/pdf/csr/2017/climate-change-opportunity-infographic.pdf](http://www.bnymellon.com/us/en/_locale-assets/pdf/csr/2017/climate-change-opportunity-infographic.pdf)

## Digitalization Trends and the Global Waste Recycling Market

According to the international research and consulting company Frost & Sullivan, smart bins, robotic sorting, mobile applications, smart trucks, and analytical tools as well as optimization software solutions are creating new growth opportunities.

Frost & Sullivan's analysis, titled "The Impact of Digital Transformation on the Waste Recycling Industry", finds that the adoption of advanced technologies, development of digital solutions, and new business models will create new growth opportunities in the global smart waste management industry. The market is projected to reach a revenue of 3.6 billion US-Dollar by 2020. Frost & Sullivan expects Internet of Things (IoT), Smart Cities, circular economy, and partnerships with information technology companies and start-ups to fuel new digital transformation.

"Companies should leverage IoT and big data to optimize and increase the efficiency of their waste management processes and strengthen client relationships," Akshaya Gomatam Ra-

machandran, Energy & Environment Research Analyst at Frost & Sullivan, is convinced. "Partnerships and collaboration with IT companies and start-ups will further enhance product innovation, customer engagement, and cost-effective business models."

Five digital transformation trends were identified to create new opportunities within the waste recycling industry:

- Use of waste data tracking includes RFID technology and fill sensors to detect fill levels and monitor all the materials generated, reused, and recycled;
- development and adoption of digital solutions such as smart bins, smart trucks, robotic sorting, mobile applications, and analytical tools as well as optimization software;

- implementation of key innovative business models such as freemium (a pricing strategy by which a product or service is provided free of charge, but money is charged for additional features or services) and Everything-as-a-Service (XaaS);
- focus on customer experience (CX) to build strong relationships with companies and end users;
- adoption of crowdsourcing and customization to boost demand for big data analytics and cloud computing.

The Impact of Digital Transformation on the Waste Recycling Industry is part of Frost & Sullivan's Energy & Environment Growth Partnership Service program.

➔ [ww2.frost.com](http://ww2.frost.com)




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## Aircraft Recycling in China

According to the Chinese state news agency Xinhua, aircraft now can be recycled at a new facility that became operational in June this year. It is located in Harbin, capital of northeast China's Heilongjiang province. The recycling and building base can handle

20 aircraft per year and the Aircraft Recycling International (ARI), a company headquartered in Hong Kong, financed it.

As reported, it will also manage and sell aircraft materials. Previously,

mainly U.S. and European companies conducted the recycling of China's aircraft. Furthermore, it was costly as well as time-consuming, a representative of Zhonglong Aircraft Disassembly Base Company, which operates the base, was cited.

## Investments in Tunisia

The European Union, the Union for the Mediterranean, the European Investment Bank and the European Bank for Reconstruction and Development have launched a project for the environmental clean-up of Lake Bizerte in northern Tunisia and the depollution of the Mediterranean. With a total budget of more than 90 million Euro over a five-year period (starting in 2016),

the program is intended to contribute to improving the living conditions of the surrounding populations and reducing the main sources of pollution impacting the entire Mediterranean Sea. It comprises four investment components: reduction of industrial pollution, extension and improvement of urban and rural wastewater collection and treatment, solid waste

as well as coastal zone management through rehabilitation of the landfills, lakeshores and fishing harbors. In February this year, international company GOPA Infra gave account that it has signed a TA contract, worth 2.2 million Euro for the implementation of the "Integrated Programme for Protection of the Lake Bizerte against Pollution".

## Ikea and Neste Are Working on Fossil-Free Plastics

Swedish-founded furniture retailer Ikea wants to have a positive impact on people and the planet while growing the business, which includes using more renewable and recycled materials and explore new materials for its products. As part of this journey, the company is working to change all of the plastic used in Ikea products to plastic based on recycled and/or renewable materials by 2030. Ikea

and Finnish refiner of oil products and manufacturer of renewable diesel Neste are now able to turn waste and residue raw materials, such as used cooking oil, as well as sustainable vegetable oils into polypropylene (PP) and polyethylene (PE) plastic. The pilot at commercial scale, chosen to contain 20 percent renewable content, will start during fall 2018. According to Neste, it will be the first large-scale

production of renewable, bio-based polypropylene plastic globally. The production of plastics will be based on Neste's 100 percent renewable hydrocarbons, the Finnish company gave account. Ikea would use the new plastic in products that are part of the current product range, such as plastic storage boxes, starting with a limited number of products. "As capacities improve, more products will follow."

## India to Ban Single-Use Plastic by 2022

**India announced to eliminate all single-use plastics from the country by 2022, media in India, Europe and America reported.**

Presumably, in India the annual average per capita consumption of plastic is at 11 kilograms – the global average amounts to 28 kilograms per person. The country generates about 25,000 tons of plastic waste every day.

Being the global host nation of this year's World Environment Day in June, "India's announcement to end use of single-use plastic in next four years is expected to send a strong message to the global community which is al-

ready threatened by the plastic menace due to its impact on marine ecosystems, water bodies and soils," the Indian Economic Times wrote.



Photo: pixabay

There are already initial reactions: According to the newspaper The Hindu, the Mumbai International Airport Limited (MIAL) announced to switch "from imposing fines on those who litter, to witty signage aimed at raising environmental awareness". And "the Tamil Nadu Government said it would ban the manufacturing, storage, and use of plastic products (except packing material for milk, curd, oil and medical products) from the first of January, 2019".



Photo: pixabay

# Kazakhstan: Investor to Build Recycling Plant in Astana

Parallel to completion of the facility, the Central Asian country will prohibit the use of landfills for untreated municipal waste.

According to the newspaper "The Astana Times", the Republic of Kazakhstan's capital Astana plans to build a recycling plant using French technology to process the city's waste. The construction will begin in August and is to be finished in September 2019. As reported, the future plant (worth about 10.3 million US-Dollar) will recycle 180,000 tons of organic waste or 50 percent of waste from the total amount. "The investor and project contractor is the German company Eggersmann Anlagenbau GmbH," the newspaper gave account in December 2016. The project would be implemented at the expense of foreign investors.

## On the way to separate collection

In April this year, "The Astana Times" reported that the company, which is going to construct the plant, has invested in 30 garbage trucks and 2,000 containers. Furthermore, two shops to process plastic and paper have been launched. In total, 15.8 million US-Dollar have been allocated for the modernization of this sector this year, Astana's mayor Assat Issekeshev was cited. For the first time in the history of the country, the system of separate collection of waste

using wet and dry fractions technology would be used in the city. "For this reason, 25 garbage trucks and more than 6,000 containers will be installed in all yards until September 2019. The depth of recycling of waste will reach 30 percent. At that, great importance will be paid to explanatory work with the population," he said according to the newspaper.

As announced, the recycling facility will be part of a system of collection, processing and disposal.

## Kazakh Waste Management

According to a Dutch source, the Republic of Kazakhstan faces severe problems in regard to waste. As reported in early 2013, there are billions of tons of industrial waste – nearly one third accumulated in the Karaganda region (8.5 billion tons by the end of 2012), where metallurgical companies are located. The amount of consumption waste is a lot bigger: At the time, Kazakhstan had amassed 23 billion tons of municipal waste, mostly stored in dumps. The annual increase of solid waste was estimated at 700 million tons, of which 97 percent were sent to landfills. The great-

## OSCE Supports Waste Management and Recycling Forum in Kazakhstan

In January this year, a forum supported by OSCE (Organization for Security and Co-Operation in Europe) discussed opportunities for attracting investments in Kazakhstan's waste recycling sector and exchanged best practices and technologies in the field. Around 60 environmental experts and representatives of central and local governments, regional waste recycling companies, civil society, international organizations and national businesses participated in the two-day event in Almaty.

The event was organized by the OSCE Programme Office Astana in partnership with Kazakhstan's Association on Waste Management, KazWaste, and is part of the Office's effort to promote green growth and sustainable development principles and to strengthen environmental security in the region.

est quantity of this kind of waste was concentrated in Almaty, the country's largest city and former capital.

In 2013, the situation of solid municipal waste management in Astana – the Kazakh capital – was analyzed by scientists of Nazarbayev University (Astana), National Technical University of Athens, Gumilyov Eurasian National University (Astana) and Kazakhstan Scientific and Technical Center of Development of Housing and Communal Services LLP (Astana). The purpose of the study included the possible implementation of a "decision support software tool developed by the research team in order to analyze data, compare alternative waste management scenarios and propose a holistic approach in solid waste management planning".

According to this analysis, the city of Astana with a population of 804,474 inhabitants generated about 1.39 kilogram/inhabitant/day of municipal solid waste, which means the generation of approximately 1,118 tons per day. The collection capacity was specified at about 600 to 800 tons per day (collection rate: about 72 percent). A Mechanical Biological Treatment (MBT) plant of a planned capacity of 600-800 tons/day and a new landfill cell of about two million tons were in place at the time. The composition of waste consisted of food and garden waste (29.5 percent), plastics (18.5 percent), paper (13 percent), glass (14.5 percent), textiles (9.5 percent), metals (0.9 percent) and others (14.1 percent). About 23 to 34 tons of recyclables (paper, metal, glass, PET bottles, HDPE film, HDPE

plastic, etc.) were separated in the existing MBT daily. "In 2014 it is planned to implement separate waste collection in places of waste accumulation and a waste separation at source system," the scientists reported in 2013.

### Separate collection as of 2019

Starting in 2019, Kazakhstan will prohibit ejecting waste into landfills without prior processing of food waste, tires, oil, batteries, electrical equipment and plastic, "The Astana Times" gave account. The new recycling complex for Astana would consist of a biogas unit, a site for composting and processing biological waste and a sorting line.

This project is not the only one that is realized through funding by investors in the Republic of Kazakhstan: With the support of "Kazakh Invest" jointly with foreign investors, there are plans to start construction of 67 projects for 7.1 billion US-Dollar in 2018 with the creation of more than 13.5 thousand jobs, the national company for investment support and promotion emphasized in April this year. It is authorized to implement measures of state support for industrial and innovative activities in attracting investment in the economy of the Republic of Kazakhstan as well as export development and promotion. According to the information, the company acts as "Unified Coordination Center for Special Economic Zones of the Republic of Kazakhstan".

➔ <http://invest.gov.kz/en>

## Canada: New Integrated Producer Responsibility Organization

**Ryse Solutions Inc. is Canada's first fully integrated producer responsibility organization offering compliance services and material recovery solutions as well as advice under one umbrella, according to the company's information.**

As reported, Ryse Solutions Inc. is already up and running to deliver integrated solutions to producers, manufacturers, packaging suppliers, importers, distributors and retailers of products and packaging materials that are obligated under producer responsibility regulations across North America. The company has access to an end-of-life product and packaging management infrastructure through

partnerships with Emterra Group, Circular Polymers Group, Emterra Tire Recycling and other organizations.

"In addition to regulatory compliance, the new company will be able to use its network to help its customers identify and meet their own recycling and sustainability targets," the company announced. Ontario's new used tire regulation, set to take ef-

fect in 2019, would be an example of changes in the producer responsibility policy framework that is pushing companies to look at how they conduct their businesses in a more sustainable way – reducing and reusing material inputs and external outputs – while complying with regulatory obligations.

➔ [www.ryseinc.ca](http://www.ryseinc.ca)

## The Circular Economy Club Is Growing

**“The Circular Economy Club (CEC) has become the fastest-growing international, open, collaborative non-profit network in the circular economy field and has had a tremendous impact in connecting individuals and organizations!”, the United Nations Sustainable Development Goals Action Campaign proclaimed.**

Starting two years ago, the CEC network now comprises more than 2,600 circular economy professionals and – at the moment – 67 attached countries.

The Circular Economy has been gaining immense traction among entrepreneurs, academics and scholars all over the world. The Circular Economy Club (CEC) as a non-profit international network believes in bringing the community of circular economy professionals together in order to solve the challenges found when implementing a circular economy. It is headquartered in London and runs voluntarily.

### All over the world

From 5th to 11th of February 2018, CEC organized the first Circular Economy Mapping Week. During this week, volunteer organizers all over the world hosted group sessions to map out the circular initiatives in their cities. Workshops took place in 67 cities, including Buenos Aires, Cape Town, Madrid, New York, London, Rio de Janeiro, Singapore and Taipei. The two objectives were supposed to bring together circular enthusiasts to discuss and learn more about the latest circular initiatives happening in their cities; and to map out circular initiatives taking place globally and make this information available online and free. Anna Queralt, CEC Mapping Or-

ganizer at Copenhagen, commented. “The reason why I supply for this position: I thought that it would be very interesting to join an organization at local level, but that it also has an impact on international level.”

Another goal of the Mapping Week was to understand what circularity means in practice, what is already working and what is not. Camillo Tellez, Community Manager of Green-cubator, formulated: “It is models that we need to implement in all areas in all different businesses.” Or as the organizers express it: “Researchers will have hundreds of examples to analyze; teachers will have plenty of case studies to use for their classes; students will be able to browse and learn from what is being done; businesses will find sustainable alternatives to solve some of the challenges they face when trying to become more environmentally friendly; startups will be able to understand whether their ideas have a market and are working already somewhere else; governments will have a clear outlook of what is being done in their regions when deciding what needs public support; investors will find projects they can back and help grow.”

The result of the Mapping week can be visited under [www.mappingweek.circle-economy.com/#/](http://www.mappingweek.circle-economy.com/#/). Here, various articles on circular economy issues

are listed like “Eliminating waste from the streets of Africa”, “Replacing fuel source for waste collection vehicles in Toronto”, “Gestión sostenible de residuos”, “Repurposing local wood waste into furniture in North London”, “Sustainable Menswear Brand” or “Lead metal recycling in water”.

### Across all channels

Meanwhile, the Circular Economy Club incorporates 27 dedicated volunteer team members, 37 mentors providing free mentorship to startups and students, 45 organizers being the “visible face of CEC in your city, university or company” as field connector in the particular region, 67 CEC Mapping Week Organizers and not to forget 2,600 members and 35,000 followers “across all channels”, as the United Nations Sustainable Development Goals Action Campaign underlines. This special initiative of the UN Secretary-General administered by the UN Development Programme (UNDP) has set 2018 key goals “to get onboard 200 volunteer organizers worldwide who bring together the circular economy community in their cities”. The launching of the ‘Shaping the Future’ project through which 300 CEC members to transfer their knowledge to 9,000 university students is also planned.

[www.sdgactioncampaign.org](http://www.sdgactioncampaign.org)

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## Reduced Contamination and Program Costs of Recovered Paper

Recycling bags could be essential in reducing contamination and capturing lost revenue, according to a new study by researchers at Canadian York University.

As reported by the university, the study “Thinking Beyond the Box” – an examination of collection mediums for printed paper and packaging waste using publicly available information and surveys with stakeholders – “comes at a time when municipalities are grappling with meeting increasingly stringent standards from China, which buys around two-thirds of North America’s recycling”.

Cities across Canada have depended on the sales of these items to China – in some cases they offset over 20 percent of the costs of the city’s overall program, the information said. Under its National Sword policy, China is refusing to accept recyclables with more than 0.5 percent contaminated materials, like food residue, non-recyclable materials or products ending up in the wrong stream (i.e. plastic with paper). “To put it in contrast, cities like Toronto, Edmonton and Halifax have reported upwards of 20

percent contamination,” the university gave account. Peel Region was a prime example of the potential cost of contamination. After China turned away 13,000 tons of product from the region’s paper recycler Canada Fiber “Peel Region will likely be saddled with a 1.7-million Dollar bill for the loss”.

According to Calvin Lakhan, a post-doctoral Fellow in the Faculty of Environmental Studies at York University and the corresponding author of the report, the trend towards cart-based automation systems could be exacerbating the problem. “From a municipi-



pal perspective, the contamination rate more than doubled if not tripled after switching to a cart-based collection system,” he was quoted. As a result, revenue from post-recyclable materials – the same revenue expected to offset the cost of these programs – has fallen.

The York study found that contamination was eight percent lower in bag-based or bag and box-based systems when contrasted with cart or box-based systems. “Recyclable bags restrict contamination to the individual bag rather than the entire recycling cart’s contents, giving collectors an additional opportunity to screen the product for things like food residue or non-recyclable materials, improving recovery rates,” the university points out. “They also offer households and businesses a chance to add-on capacity as needed.”

➔ [www.yorku.ca](http://www.yorku.ca)

## USA: Goal Is to Increase Residential Recovery of Old Corrugated Containers

Corrugated packaging and recycling industry groups recently met to review recommendations for increasing residential recovery of old corrugated containers (OCC), the Fibre Box Association (FBA) reported in June.

The recommendations are a result of research for the Fibre Box Association (FBA), a non-profit trade association that represents North American corrugated packaging manufacturers. In this research, more than 1,000 Americans were asked about their residential OCC recycling practices. According to the information, the corrugated packaging is the most widely recycled packaging material with a recovery rate near 90 percent for the past seven years.

To retain this leadership role, the corrugated industry is exploring how shifts in consumer purchasing patterns could impact recovery. The corrugated packaging and recycling industry groups recognized the need for a renewed focus on promoting

the recyclability of OCC. They agreed to pursue a broad set of initiatives to help increase recovery:

- Promote the use of carts instead of bins for curbside collection of OCC where applicable to accommodate greater collection;
- support efforts to match the frequency of recycling and trash collection to provide equal access to recycling;
- establish clear and harmonized messages and graphics for household recovery of OCC including what can be recycled and how to do it;
- develop more direct recycling messages on boxes to remind consumers to recycle;
- work with additional groups on recycling education to increase un-

derstanding and encourage recycling behaviors;

- support the development of building codes that make recycling easy for multi-family dwellings;
- encourage replication of successful multi-family and rural recovery programs.

As reported, the groups believe in a renewed focus on its recyclability and will spur additional recovery efforts. The meeting led by FBA included AICC – The Independent Packaging Association, American Forest & Paper Association, AMERIPEN, Institute for Scrap Recycling Industries, Waste Management, and member companies Cascades, Dusobox, Georgia-Pacific, International Paper, Kruger, PCA, Pratt Industries and WestRock.

## Paper for Recycling: Less Demand in China

Experts believe Chinese imports of recovered fiber could drop to between 15 and 17 million tons in 2018 after having reached almost 29 million tons as recently as 2015, delegates were informed during the BIR's latest Paper Division meeting, held in Barcelona.

One reason for this is the increased amount of used paper in the country. According to BIR World President Ranjit Singh Baxi (J&H Sales International, UK), the collection of paper for recycling in the People's Republic of China is on the rise. As a result, the country will import less recovered fibers. But the main reason is the enforcement of the Chinese government controls allowing only recyclable fibers with maximum contamination of 0.5 percent. As reported, Chinese imports fell from 5.4 million tons in the opening quarter of 2017 to 3.5 million tons in this year's corresponding period, with European suppliers providing only 719,000 tons and their US counterparts 2.59 million tons. Import licenses issued up until the end of April this year were for a total of about 10.9 million tons, the expert stated. And 50 to 60 percent of those licenses have already been used.

A positive note was sounded by BIR Paper Division President Jean-Luc Petithuguenin (Paprec Recyclage, France), who said that operations using the correct equipment had the capability to achieve the quality standard laid down by the Chinese authorities. Paprec "sells more to China now than in the past", he declared.



Photo: BIR

The country would push the industry "in the right direction".

### More regulations

Ranjit Baxi also complained about a trend towards the "unilateral imposition of regulations". At times with little or no warning, countries were introducing regulations that massively impacted the recycling industry. By way of example, he highlighted the decision by the Indonesian government to implement 100 percent inspections of "non-toxic and non-hazardous waste" imports, including recovered paper, with effect from April the first this year.

Robin Wiener, President of the US Institute of Scrap Recycling Industries, expressed concerns about the spread of China's policies and messaging to other Asian countries, including Indonesia and Vietnam. Often, she added, new regulations led to more questions and uncertainties for the recycling industry; for instance, the industry would still be seeking clarification about the precise meaning of "carried waste" in China's new rules governing contamination thresholds for recovered paper imports. In terms of on-the-ground implementation, she assumed that if inspectors have any doubt, it falls on rejection rather than approval.

## A Notable Anniversary

In Barcelona, around 1,100 delegates from 63 countries celebrated the 70th anniversary of the Bureau of International Recycling (BIR).



The global federation has "accomplished a great journey during the last 70 years, growing from a handful of visionary recyclers to a global organization with members in 70 countries across the globe," BIR World President Ranjit Singh Baxi said in his address to the federation's Annual General Assembly. Defending the interests of the recycling industry worldwide would continue to constitute "the main duty" of the BIR. Any moves to restrict free trade in recyclables "must be resisted", not only for economic reasons but also for "the greater goal of protecting the environment", he underlined.

Regarding the higher quality demands now placed on recyclers, Ranjit Singh Baxi insisted the industry was willing to meet this challenge. But he added: "It is time for the governments and local authorities to stand up and take ownership of the problem by extending special tax benefits to allow the industry the much-needed investment support to override the quality challenges imposed upon us." On this occasion, the BIR world president emphasized also the importance of Global Recycling Day.

## Obstacles to Plastics Trade in Asia

The international scenario of the plastic scrap market due to China's import ban was the subject of the BIR Plastics Committee.

China's "unprecedented" move to stop plastics scrap imports had "surprised the whole world", according to Dr. Steve Wong of Fukutomi Co. Ltd and the China Scrap Plastics Association. And in response, many recyclers had shifted their operations mainly to the South East Asian countries of Malaysia, Vietnam and Thailand, he told the BIR Plastics Committee meeting in Barcelona.

As stated by Dr. Wong in the May issue of the "BIR World Mirror" on Plastics, it is estimated that local investments by China's recyclers have amounted to 1.6 billion US-Dollars. With more factories moving to South East Asia and increasing their production capabilities, these countries would satisfy nearly five million tons of China's recycled pellet demand by the end of this year.

However, the Malaysian government had stopped accepting applications for approval permits while the authorities in Vietnam and Thailand were clamping down on factories failing to comply with environmental regulations, leading to some closures. Other potential outlets in Asia – such as Taiwan and the Philippines – were unable to take substantial volumes, Dr. Wong informed during the BIR convention. He reiterated his support for greater recycling at a source, not-

ing an increasing number of examples of businesses going down this route in Europe and the USA. In April this year, the People's Republic of China announced an updated list of items prohibited for import, including a ban on plastic scrap from post-industrial sources, which will come into force at the end of 2018.

Plastics scrap imports into India were running at around 400,000 tons per year and were therefore eclipsed by the annual seven million tons that had entered China in the past, noted BIR Plastics Committee Chairman Surendra Patavari Borad of Gemini Corporation. "The plastics scrap industry in India is going to boom," he added. "I only hope it is soon." In this context, he informed that the import of PET grew substantially. However, "the main stumbling block" towards growth in Indian import was the difficulty in getting import licenses; only 35 companies have been allocated the licenses. But Surendra Patavari Borad is optimistic that in India the awareness of the authorities towards recycling will rise.

In a report on the US market, the chairman of the Plastics Committee drew attention to new targets established by the Plastics Division of the American Chemistry Council, including 100 percent of plastics packaging

to be recyclable or recovered by 2030 and 100 percent of plastics packaging to be reused, recycled or recovered by 2040. These were "very ambitious" goals, he said, given that the plastic bottle recycling rate in the USA was currently around 30 percent.

The European report from Renaud Pfund of Veolia Propreté France Recycling identified increased demand from Eastern Europe for PET and HDPE bottles, leading to "quite strong" prices. The French government is asking for a voluntary plan for the recycling and producing industry for the integration of resins from the regeneration, he told the delegates. Plastics recycling opportunities in the Middle East, meanwhile, would be improved if the region could offer "a long-term, predictable regulatory legal framework", according to Mahmoud Al Sharif of the UAE-based Sharif Group of Companies. In that regard, he underlined the "tremendous scope for growth". The Gulf States (Cooperation Council for the Arab States of the Gulf – GCC) are also working towards a zero-landfill target for reducing plastics wastage by 2040, the delegates learned.

The guest presentation from Vicente Olmos, CEO of Sintac Recycling & Sintac Recycling Systems and Compounds of Spain, agreed that plastics had arrived at "a big moment of change", with the need to focus on recycling "at a local level" after many years in which a large proportion of scrap was dispatched to far-away destinations. Plastic products themselves would have a future only if they were eco-designed, comprised a high recycled content and followed closed-loop collection and recycling systems with full traceability.

Fellow guest speaker Markus Panhauser, COO of FMS Logistics in Germany, focused on the future of shipping and said consolidation among carriers would ultimately lead to less competition and higher freight rates.



## National Sword – No Need for Fear!

Norway-based Tomra Sorting Recycling has published an e-book to help recycling companies to meet China's National Sword standard.

The People's Republic of China had sent shock waves through the recycling industry by requiring much recyclable material arriving in the country to have purity levels greater than 99.5 percent. According to Tomra Sorting Recycling, the e-book contains advice on how to meet the new rules for sending recyclable materials to China. It "aims to address widespread concerns about China's National Sword standard, introduced to the World Trade Organization in July 2017 and fully implemented on the first of



March 2018, which demands higher purity levels in recyclable materials entering the country. This standard is expected to be expanded to include a total of 16 materials by the end of

this year, and to add a further 16 materials by the end of 2019." Tomra's e-book explains why, for businesses striving to meet the new standard, adding more manual pickers is not a sustainable option, and why sensor-based mechanical solutions are financially smarter. The publication titled 'National Sword – No Need for Fear!' is available online at <https://leads.tomra.com/ebook/press/> and downloadable free-of-charge.

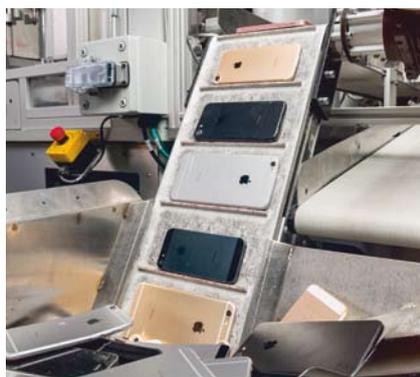
[www.tomra.com](http://www.tomra.com)

Photo: Tomra

## Apple's New Robot Disassembles iPhone to Reclaim Precious Materials

According to Apple Inc., as part of its recycling effort, the producer of computers, smartphones and software has created Daisy, "a robot that can more efficiently disassemble iPhone to recover valuable materials".

The company expressed the conviction that its newest disassembly robot, Daisy, "is the most efficient way to reclaim more of the valuable materials stored in iPhone". Created through years of R&D, Daisy incorporates technology based on Apple's learnings from Liam, its first disassembly robot launched in 2016, the producer underlined. "Daisy is made from some of Liam's parts and is capable of disassembling nine versions of iPhone and sorting their high-quality com-



Daisy is Apple's new disassembly robot

ponents for recycling. Daisy can take apart up to 200 iPhone devices per hour, removing and sorting components, so that Apple can recover materials that traditional recyclers can't – and at a higher quality." As reported, Apple's GiveBack and Daisy would support the company's commitment "to create a healthier planet through innovation – and help the company move a step closer to its goal of making its products using only recycled or renewable materials".

Photo: Apple

## UNIDO and BIR to Intensify their Cooperation

In June this year, the United Nations Industrial Development Organization (UNIDO) and the Bureau of International Recycling (BIR) have signed a joint declaration on their intention to cooperate closely.

They aim to promote inclusive and sustainable industrial development by supporting sustainable recycling practices and industries and better use of resources, the UN organization reported. The joint declaration was signed by Li Yong, Director General of UNIDO, and BIR President Ranjit Singh Baxi in Vienna at UNIDO's International Centre. The two parties agreed to raise awareness of the importance of recycling industries and their potential to create jobs and prosperity while preserving resources. In addition, they will encourage manufacturers to design products which are easier to recycle.

According to the information, the two organizations agreed to work together on specific activities and events, such as seminars, country presentations, global forums, and similar initiatives aimed at supporting inclusive and sustainable industrial development. "In November 2018, UNIDO will organize a meeting of international experts, including members of BIR, to address barriers to the development of recycling industries," a press release of the United Nations Industrial Development Organization said.



# Circular Economy in the European Union

According to the European Union, the new rules – based on the Circular Economy package presented in December 2015 – will make the community of states the global front-runner in waste management and recycling.

On 22 May this year, the European Council approved a set of measures to make the waste legislation fit for the future, as a part of the EU's wider circular economy policy; this caucus brings together 28 heads of state and government of the EU countries and represents the highest level of political cooperation between the EU Member States. Previously, the European Parliament had consented to the waste management and recycling package in April 2018. The new rules "will help to prevent waste and, where this is not possible, significantly step up recycling of municipal and packaging waste," the EU Commission gave account. "It will phase out landfilling and promote the use of economic instruments, such as Extended Producer Responsibility schemes. The new legislation strengthens the 'waste hierarchy', i.e. it requires Member States to take specific measures to prioritize prevention, re-use and recycling above landfilling and incineration, thus making the circular economy a reality."

In the view of the EU bodies, the new rules adopted represent "the most modern waste legislation in the world, where the EU is leading by example for others to follow". The recycling targets for municipal waste will be 55 percent by 2025, 60 percent by 2030 and 65 percent by 2035. Additionally, stricter rules for calculating recycling rates will help to monitor more effectively real progress towards the circular economy, the commission underlined. There are also new requirements for packaging waste: The recycling rate for all packaging will be 65 percent by 2025 and

70 percent by 2030. As reported by the European Commission, the new legislation foresees more use of effective economic instruments and other measures in support of the waste hierarchy. "Producers are given an important role in this transition by making them responsible for their products when they become waste. New requirements for extended producer responsibility schemes will lead to improving their performance and governance. In addition, mandatory extended producer responsibility schemes have to be established for all packaging by 2024."

## Separate collection and landfilling

Building on the existing separate collection obligation for paper and cardboard, glass, metals and plastic, the "new separate collection rules will boost the quality of secondary raw materials and their uptake", the EU politicians are convinced. Hazardous household waste will have to be collected separately by 2022, bio-waste by 2023 and textiles by 2025. According to the EU position, landfilling of waste makes no sense in a circular economy and can pollute water, soil and air. By the year 2035, the amount of municipal waste landfilled will have to be reduced to ten percent or less of the total amount of municipal waste generated. The new legislation will place a particular focus on waste prevention and introduce important objectives for food waste in the EU and will be halting marine litter to help achieve the UN Sustainable Development Goals in these areas.

## EU's Way to Decrease the Volume of Waste

According to the information, over the past two decades, many Member States have gradually improved their waste management, in line with the EU waste hierarchy. In 1995, an average 64 percent of municipal waste was landfilled. In 2000, the average volume had been reduced to 55 percent while the average recycling rate stood at 25 percent. In 2016, landfilling of household waste in the EU as a whole dropped to 24 percent, with recycling it has increased to 46 percent. "Yet, challenges and big differences between EU countries remain," the European Commission informed. "In 2016 ten Member States still landfilled over 50 percent of their household waste and six of them incinerated 40 percent or more."

# PLASTICS RECYCLING FROM WEEE AND ASR



**Each year, millions of tons of plastics end up in landfill.** Not only is this damaging for the environment, you also throw away a valuable commodity. Knowing that recycling of plastics requires only 20% of the energy necessary to produce virgin plastics, you quickly realize that plastic recycling is the future. With our technology, we can help you to “close the loop”.

We separate and recycle plastics from electrical and electronic waste, as well as from automobile shredder residues. The **Ad Rem** plastic separation system reveals the true potential of your waste materials.

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- + Plastics from WEEE and ASR



# Greece – A Late Developer in Recycling

“The country’s waste management situation is a major structural problem. Greece landfills the majority of its municipal waste (81 percent, compared to 31 percent for the EU-28 average), with only 16 percent being recycled (EU-28: 27 percent) and four percent composted (EU-28: 15 percent)”, the EU Commission stated in an Environmental Implementation Review on Greece in February 2017. Illegal landfilling, very low recycling rates and the management of hazardous waste were criticized most. Financing seemed also to be a significant issue, particularly for areas where EU funding is not available. But the tide has begun to change.

In 1997, Greece disposed of his waste by a number of 6,500 uncontrolled landfills. Even in May 2014, the EU commission found out that 70 illegal landfills were still in use and 223 had been closed but not remediated. Latest figures show 20 uncontrolled, still used and 46 closed, but not sanitary landfill sites and 21 necessarily further used deposits. According to Eurostat, Greece produced 5,362,000 tons of municipal waste in 2016, of which 5,277,000 tons were treated, 4,415,000 landfilled, 698,000 tons recycled, 27,000 tons incinerated including energy recovery and 135,000 tons composted and digested.

## 17 percent municipal waste recycling rate

The recycling quota of 13,2 percent in contrast to 83,6 percent landfilling rate has been complained by the EU Commission several times and costs the country a lot of money. For example, in December 2014 a penalty of 22 million Euro and 54,450 Euro for every day for not closing several landfills was imposed, followed by a ten million Euro fine and another 30,000 Euro per every day regarding

the treatment of hazardous waste in September 2016. Regarding packaging waste, the Hellenic Recovery Recycling Corporation (HE.R.R.Co) represents 1,893 affiliated companies and collaborates with 297 local authorities. According to the corporation, 94 percent of the country’s population has been covered in 2016 by 157,000 Blue Bins, and more than 7,000 Blue Bells have been placed where citizens can deposit all waste packaging. This material was shipped by approx. 500 special vehicles given to the municipalities to 32 mechanical recycling sorting centers. The resulting 550,000 tons of materials were recycled via Herrco’s activities and achieved a 13 percent increase in packaging waste quantities processed in comparison to 2015. The European Statistic Agency Eurostat still announced a recycling rate of 17 percent for municipal waste in 2016.

## 22 recycling systems accredited

The National Waste Management Plan indicated 55 transfer stations (14 under construction), three mechanical and biological treatment plants and 35 mechanical recycling

plants. But as nearly half of municipal waste in Greece consists of organics, the resulting recovered materials such as RDF and compost did not have a responding market and were in the most cases just disposed to landfill, according to the country report of Efstratios Kalogirou and Antonios Sakalis in 2016. In spite of that, 22 recycling systems are accredited for the collection and utilization of packaging, battery, accumulator, electronics, used oil, end-of-life vehicles as well as construction and demolition waste. Following the figures of Kalogirou and Sakalis for 2012, the recovery rates differed between batteries (35 percent), packaging waste (58 percent), metal scrap from ELV (71 percent) and WEEE (reuse/recycling by 88 percent).

First signs of a new economic beginning could be discovered in 2011 when the Invest in Greece Agency conducted a survey on the "maturity level" of waste management projects. As a result, 50 solid waste management projects were expected to be tendered and implemented. In fact, only two PPP projects were anticipated: an integrated waste management system in the prefecture of Thessaloniki with a capacity of 400,000 tons per year – costs: 242 million Euro and additional 20 percent for heavy maintenance and insurance – and the same in the region of Western Macedonia with a capacity of 120,000 tons and finally 152,000 tons per year – costs: 116,4 million Euro.

### Intermission by new Waste Management Plan

The first boost came in 2014. According to World Finance, four preferred bidders were announced in Western Macedonia, Peloponnese, Serres (Central Macedonia) and Ilia

(Western Greece); eight tender procedures were in progress. The twelve projects were expected to have a value of two billion Euro, co-financed by EU funds, and to create 3,000 new construction and 2,500 new operational jobs. Temporarily the National Waste Management Plan 2015–2020 put an intermission to the investment plans and the tenders, as the NWMP achieved new targets and caused the tenders to revise their offer.

But in May 2017 an Integrated Waste Management System started in the Western Macedonia region; it became the first of its kind and the first PPP waste project in operation. Its total costs were now 49 million Euro – partly by European funding and private capital –, its separation facilities were able to recover eight types of recycling material, and in a short time, the system met or even exceeded the targets. Meanwhile, comparable projects in Serres and Epirus are being planned and signed. An Integrated Waste Management project worth 48 million Euro in Kozani (Northern Greece) entered a trial phase; the PPP enterprise with a capacity of approximately 120,000 tons per year will serve 12 municipalities. And the EU Partnership Programme provides 150 million Euro for two more projects in Attika.

### RDF production rejected

Regarding the feasibility of the waste-to-energy technology, in 2011 the German magazine "Müll und Abfall" proposed their construction in all major cities operating with an annual capacity of 200,000 to 400,000 tons. For basic income of such plants, the magazine identified the gate fees as well as the produced electricity and the recovered met-

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als of the bottom ash sold. Kalogirou and Sakalis judged it “the final solution of the MSW problem of the Region”. But the NWMP – probably fearing the public opinion – assessed the different thermal methods as of high environmental impact and rejected the production of RDF/SRF as a non-appropriate treatment method.

### Responsibility for municipalities extended

On 29 November 2017, a new law (4496/2017) changed the conditions for packaging recycling. Hitherto, the Greece municipalities were responsible for the collection, transport and storage of waste, done by locally owned services

or with the help of one of the 500 licensed firms. Now the municipalities are allowed to manage the recyclable material and to generate revenue by themselves. Although the separation of glass, paper, plastics and aluminum is obligate, this new intake will reduce the costs of the community and relieve the citizens partly from charges.

The related increase of recycling material will also force communities, citizens and waste treatment enterprises to collect respectively treat more waste. Or, as business development agency Germany Trade & Invest phrased: “The branch has good chances of expansion and a great backlog demand.”

## An Integrated Waste Management System for Western Macedonia

About one year ago, Greece’s first PPP (Public Private Partnership) integrated waste management system project in Western Macedonia, Municipality of Eordaia, went operational.

According to InvestEU, it was built at a cost of 50 million Euro. This sum includes 17 million Euro from the contractor, 26 million Euro in EU funding and loans, and six million Euro in bank loans and private capital. The funds also cover 27 years’ maintenance and operation of the system. The infrastructure can manage 120,000 tons

of waste a year and should cut landfill use. As reported, Western Macedonia was the first region in Greece to operate such a facility; it would comply with European directives relating to waste management. The contract for the construction and operation of the first integrated waste management system (IWMS) through a PPP was

signed in 2015. It provided two years for the construction of new infrastructure and 25 years for the operation of new infrastructure and existing transfer stations in the region.

The project contractor was Epadym S.A., a special purpose company incorporated by Helector S.A. and Aktor Concessions S.A. to implement the contract. The company is – like Helector, the constructor specialized in waste management – a member of the Greek Ellaktor Group.



Photo: Helector

### Special Secretariat for PPP

The coordinator of this project was the Greek Ministry of the Economy, Development and Tourism – Special Secretariat for Public-Private Partnerships. According to the information on the secretariat’s homepage, “Greece is a pioneer in the field of blending EU grant and private capital into PPP projects in Europe based on the European Parliament’s Report” (👉 [www.europarl.europa.eu/RegData/etudes/STUD/2017/602010/IPOL\\_STU\(2017\)602010\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2017/602010/IPOL_STU(2017)602010_EN.pdf)).

“The Special Secretariat for PPPs strongly promotes works in waste management throughout Greece. The aim is to utilize community resources in waste management PPP projects and other environmental projects,” the homepage says. Ideas are welcome.

👉 [www.sdit.mnec.gr/en/](http://www.sdit.mnec.gr/en/)

## Cyprus Intends to Close the Kotsiatis Landfill

In April this year, the newspaper CyprusMail reported that the government was paving the way for the closing down of the Kotsiatis landfill.

According to the newspaper, an agreement was reached with Greek company Helector, which is running a waste management facility in Koshi. The Central Committee on Changes and Claims (KEAA) has approved a supplementary agreement for the operation of the existing waste management plant, a statement from the agriculture ministry was cited. As reported, the agreement provides for paying the company approximately 17.5 million Euro instead of the 19.5 million Euro the company was initially asking for and 29.1 million Euro resulting from the existing agreement. "That money was to cover operation fees owed to the company since January 2015," the information said. The waste from the district of Nicosia (the capital city of Cyprus) will be treated by the Koshi facility – and the Kotsiatis landfill will be closed.

In October last year, online-publication Balkan Green Energy News informed, that the European Union had given Cyprus more time to shut down the illegal landfills in Vati and Kotsiatis. The EU had demanded this in 2013. Since an infringement process was initiated in May 2017, Cyprus had to face fines of 30,000 Euro for each day of delay.

The Kotsiatis landfill was supposed to close in 2009, the information provided by CyprusMail said. At the time, there was a plan to build a separate

waste management plant in Nicosia. However, it was scrapped and "it was decided to transfer waste from Kotsiatis to the Koshi plant in Larnaca". Procedures for this were delayed following bribery scandals and ensuing trials concerning Helector (which runs the Koshi and Paphos sanitary landfills), and rejections by the Central Committee on Changes and Claims (KEAA) of deals agreed between the government and this company on the management of the Nicosia district's waste.

### Waste generation

According to Cyprian environment officer Athena Papanastasiou, every person of the nearly 900,000 inhabitants of Cyprus generates more than 660 kilograms of solid municipal waste per year. Although the municipal waste generation has decreased over the years, it still remains significantly higher than the EU average, the European Commission stated some years ago. The country landfills the majority of its municipal waste (80 percent compared to the EU average of 28 percent). Recycling accounts for 19 percent, including four percent of composting, which is significantly below the EU average (44 percent). The Republic of Cyprus "must make significant efforts to improve the performance of its waste management system with a view to meeting the current EU waste targets, especially

by increasing separate collection and recycling, reducing landfilling and eliminating the illegal landfilling of waste," the EU Commission insisted.

The Commission also takes the view that there are opportunities for the country:

- Moving away from landfilling by focusing policies and investments on implementing the separate collection obligation to increase recycling rates, particularly by making more efficient use of economic instruments.
- Safeguarding the country's natural capital and promoting green tourism, which can bring about significant economic benefits.
- Enhancing investments in eco-innovation, aligning promoted activities with the country's environmental needs (e.g. water scarcity, improving recycling) and to its natural capital (e.g. potential for developing renewable energy).

The country's growth sectors include renewable energy (such as biomass). According to the investment promotion agency InvestCyprus, the government has launched a number of financial measures in the form of governmental grants and/or subsidies for this sector.

➔ [www.investcyprus.org.cy/en/cyprus-investment-promotion-agency](http://www.investcyprus.org.cy/en/cyprus-investment-promotion-agency)

## Energy Recovery of Non-Recyclable Urban Waste

According to researchers of the Spanish University of Seville, the use of urban waste for energy creation, especially the use of technologies based in gasification, is a more sustainable alternative than controlled dumping. As reported, data from the European agency Eurostat show that 13 of the 28 countries in the European Union (mainly member states in the south and east of the continent) are still dumping about 50 percent of their solid urban waste. Faced with this reality, researchers from the Higher Technical School of Engineering (Escuela Técnica Superior de Ingeniería - ETSI) of the University of Seville have proposed a two-stage system: first, the solid waste is converted to gas in reducing conditions (that is, with the presence of little oxygen), and then the generated gas is burnt very efficiently in specifically optimized equipment. "The great environmental advantage of this method, as opposed to incineration, is that in reducing conditions the generation of toxic substances is minimized. The energetic efficiency of the process is, on the other hand, similar to incineration," it was argued. The environmental advantage of gasification, therefore, would be to avoid the emission of the equivalent of up to 300 kilograms of CO<sub>2</sub> per ton of solid urban waste treated, while the economic impact would be to increase the rate of waste management.



# Ireland: Investments in a Developed Waste Infrastructure Are Worth it

Photo: pixabay

For Kieran Mullins, Chairman of the Irish Waste Management Association (IWMA), Ireland has shown a fantastic performance. “Twenty years ago, just 7.8 percent of municipal waste was recycled or recovered, but a commitment by Ireland’s households to recycling and greater environmental awareness means we have made huge gains since then. Everyone in Ireland should be very proud of these achievements”.

According to Eurostat in 2013, Ireland was the joint third for recycling within the EU by recovering and diverting 58 percent of all municipal waste generated by Irish consumers from landfill. The IWMA even estimated an 80 percent recovery rate based on an estimate of 2.5 million tons of municipal waste managed each year in Ireland and industry knowledge that currently approximately 500,000 tons per annum of this waste is sent to landfill for disposal. The remaining about two million tons were recovered, including recycling, composting, use as a fuel in cement kilns and waste to energy incineration in Ireland and abroad.

## Paper accounted for the largest volume

Repak is a not-for-profit company set up by Irish business, owned by its members and operating as a compliance scheme for packaging recovery. According to its annual report in 2016, the company funded the recovery and recycling of 794,848 tons of household and backdoor packaging waste. A total of 593,991 tons of packaging waste was sent for recycling, and a total of 200,857 tons was sent for recovery; this includes solid recovered waste (SRF), refuse derived fuel (RDF) and fuel for wood pellet/chip for boiler fuel. Paper accounted for the largest volume of tons recycled (49.7 percent), followed by glass (22.2 percent) and plastic (14.3 percent). The total amount increased by four percent in 2015. This growth could be detected in the waste to energy recovery of packaging material (by ten

percent) and total tons recycled (by two percent). The Irish Environment Protection Agency proposed figures that, by 2016, recycling (principally of paper and cardboard waste which cannot be reused) would divert 875,371 tons (38.6 percent) from landfill with biological treatment (mainly food and garden waste) contributing 442,129 tons (19.5 percent) to the overall target. Thermal treatment would divert 499,762 tons (22 percent) of residual waste from landfill by the same date. It also established a longer-term target of 80 percent diversion of biodegradable waste from landfill.

## Waste-to-energy growing

The amount of waste landfilled was significantly reduced during the last two decades: It diminished from 80 percent in 2001 to 53 percent in 2011. The number of 126 official dumps accepting municipal waste went down to no more than a handful. But not before 2011, the first commercial municipal waste incinerator was put into operation with a capacity of 200,000 tons per year adding to the 300,000 tons annual capacity represented by cement kilns using waste-derived fuels in co-combustion; 20,000 households were then provided with waste-powered electricity. Two further licenses for municipal incinerators were granted at Ringaskiddy and Poolbeg of which the planning permission for the Ringaskiddy incinerator was subsequently rejected.

Once fully operational, the Poolbeg plant in Ireland's capital Dublin will generate 58 MWh of electricity for export to the national grid every year – equivalent to the amount of electricity used in 80,000 Irish homes. The plant – a public-private partnership – is also capable of producing district heating for up to 50,000 homes. The facility will process 600,000 tons of waste per year and thus offset the need to import 250,000 tons of fossil fuels each year.

### Great amount exported

“The most significant change in residual waste treatment has been the shift from disposal to landfill to energy recovery, with six active landfills in 2016, in comparison with 18 in 2012”, balanced the Irish Environmental Protection Agency. In addition to the two incineration plants, three cement kilns are accepting solid recovered fuel (SRF) for co-incineration as an alternative to fossil fuels. According to EPA figures in 2016, the annual incineration capacities include 230,000 tons active, 600,000 tons (the Poolbeg plant) under construction and 343,000 tons by co-incineration at cement kilns. (In later 2018, investment of about 14.5 million Euro is planned into a plastic film waste recycling plant for the procession of 10,000-15,000 tons.) The annual capacity of municipal waste landfill was 910,000 tons built.

But a great amount of residual waste was exported – in the period between 2010 and 2014 with a 10-fold increase. For “thermal waste recovery”, Ireland imported up to 45,000 tons of residual waste for use as fuel in 2015 but exported about 550,000 tons for the same purpose at that time. Ireland – the top producer of plastic waste in Europe – temporarily shipped nearly 95 percent of its plastic waste to China. Regarding the current Chinese import ban, Séamus Clancy, chief executive of Repak, recapitulated that “until now, we have been too reliant on China and the Far East for recycling facilities, particularly for plastics, but also for paper”.

### Some waste infrastructure deficits

The aforementioned EPA paper had already warned in 2016 that if Ireland is largely dependent on its export market and has insufficiently developed national capacity, the country becomes “vulnerable to external forces such as economic recession, currency fluctuations and any changes to import policy in the EU”. And the European Environment Agency noted “that the vast majority of dry recyclables in Ireland are exported for recovery due to lack of recycling facilities. Thus, continuing to achieve the 50 percent recycling of household waste target in the future is subject to volatile global prices for recyclates.” Consequently, the economic viability of separate waste fraction collection in Ireland would be strongly influenced by these prices.

The EPA paper furthermore discovered “some waste infrastructure deficits”, among them a lack of a hazardous waste landfill – 44 percent of hazardous waste in 2014 was exported, mostly to Great Britain, Germany and Belgium. Other deficits are capacity lacks in recycling. An article

supported by the Ministry of Environment has broken down more detailed, what had already been reached and what has to be done: In 2017, Ireland has met the targets for Packaging and Packaging Waste Directive, Landfill Directive, Waste Electrical and Electronic Equipment (WEEE) Directive and Waste Framework Directive. But it had to be registered that there is a risk of missing targets for the end-of-life vehicles, WEEE recast and batteries as well as accumulators.

### Existing capacities are unbalanced

Already in 2014, Engineers Ireland had published a review of infrastructure that urged investment in collection and treatment infrastructure, among others composting facilities and anaerobic digestion plants. “Investment in infrastructure is needed if we are to close the capacity gap and become more self-reliant in terms of treating our own waste. The State's existing capacities are unbalanced with high capacity levels of pre-treatment and mechanical treatment and below capacity levels of final destination facilities, e.g., biological treatment plants and waste-to-energy plants.” The review requested for programs and projects “continued investment if economic growth and waste arising are to be decoupled in a sustained manner”. And it earmarked a five-years-plan including a “correct mix of waste capacity infrastructure to manage non-hazardous and hazardous wastes”, further development of biological treatment capacities including anaerobic digestion, and the improvement of waste and resource management modules as part of civil and environmental engineering courses.

### Needed: a domestic waste management

In November 2017, Indaver Group – Dublin-based waste management business for industry and authorities – pleaded for a coordinated and developed waste infrastructure strategy: not only to support the Irish economy and society but also to become self-sufficient and develop in a sustainable and environmentally sound manner. Complying with the EU Directive requirements would thereby help to avoid the imposition of penalties. Indaver insisted on the need to address a domestic waste management in the National Planning Framework “in terms of an Ireland as seen in an all-island context”. And underlined that the Waste Management Plans for the Southern, Eastern Midlands and Connacht/Ulster Regions and the National Hazardous Waste Management Plan 2014-2020 have called for further investment in treatment infrastructure for waste.

In its 2017 Environmental Implementation Review Country Report, the EU Commission was skeptical whether Ireland would reach the foreseen recycling aims: “Caution is needed so that future investments in incineration (energy recovery) or in mechanical biological treatment (MBT) plants based on mixed waste input do not hinder Ireland from meeting the recycling target for 2020.” However, the report was sure that investment could be worth it: Full implementation of the existing legislation could create more than 6,100 jobs in Ireland and increase the annual turnover of the waste sector by over 640 million Euro.

# Moldova: The Chisinau Solid Waste Project

If approved by public financiers and an international donor, the project will significantly improve the waste management situation of the Moldavian capital Chisinau.

According to the information provided by the European Bank for Reconstruction and Development (EBRD), the Chisinau solid waste project comprises a sub-sovereign loan of up to 10.5 million Euro to Regia Autosalubritate, a municipal solid waste management company in the Republic of Moldova. The municipality will guarantee the loan and is expected to be co-financed with an EIB (European Investment Bank) loan of up to 10.5 million Euro and an investment grant of up to 5.0 million Euro from an international donor.

The investment program includes

- closure of the existing dump site in Ciocana in the City of Chisinau;
- re-opening and upgrading of the currently non-operational landfill site to EU compliance, including associated infrastructure (leachate treatment plant, landfill gas collection, access road) – the site is located in Tintareni village (Anenii Noi District), 30 kilometers south-east of Chisinau;
- rehabilitation of the existing waste collection and transportation;
- upgrade of the transfer station and introduction of a waste sorting line.

The project is part of the Green Cities Framework (GrCF) – a strategic and multi-project approach targeting environmental issues in selected large cities in EBRD's countries of operation. "The primary goal is to achieve significant environmental improvements and promote the green transition quality in Chisinau," the bank informed. "The GrCF also aims to build necessary capacity and facilitate better coordination and buy-in among various stakeholders within the relevant cities in order to improve the governance, operational efficiency and financial sustainability of the tar-

geted investments and initiatives. These objectives are supported by the development and implementation of a city-specific Green City Action Plan (GCAP) identifying and prioritizing environmental challenges and ways to address them through targeted investments, services and policy instruments."

This is not the only initiative. A project, titled "Modernisation of local public services in the Republic of Moldova" and commissioned by the German Federal Ministry for Economic Cooperation and Development, cooperates with national partner institutions to strengthen the planning and implementation capacities of local authorities, German GIZ Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH gave account. It provides assistance in developing the legal and institutional framework for regional development in order to improve local public services in rural areas, in four sectors:

- Water supply and sanitation
- Solid waste management
- Regional and local roads
- Energy efficiency of public buildings

As reported, the project supports investments in infrastructure, as prioritized in a participatory process. Its measures include the provision of training in regional planning and programming, public procurement, corruption prevention and the management of local public services.

## Moldova's waste situation

According to information provided by media and other sources some years ago, the about three million citizens of the country produce around 2.5 million tons of waste annually. Between 2006 and 2012, the annual volume of

waste processed presumably dropped from 840,000 tons to 470,000 tons. The rest is sent to 1,867 landfills.

A research of the World Bank found out that along with the increase of the level of income of the population the rate of waste generation per capita rises as well, which in rural areas usually is 0.3-0.4 kg/capita/day and 0.9 kg/capita/day or higher in urban areas. Out of a total amount of 2,841,000 tons of waste from the activity of enterprises produced in 2008, most of it – about 1,570,000 tons – were represented by waste derived from food processing and beverage industries, 540,000 tons from the extraction enterprises, 249,000 tons from animal breeding. Only 30 percent out of the total amount of production waste was used, 50 percent have been eliminated by storage, while 20 percent were kept on the territory of the enterprises. The country's law on waste was published in 2016. The National Waste Management Strategy for 2013-2027 was developed according to the Directives of the European Union and approved in 2013, setting waste management goals in line with EU principles. It sets objectives and implementation measures for each waste stream and estimates the costs of these measures at 375 to 470 million Euro for the period.

### Investments are gaining momentum

In 2016 and 2017, the Moldavian economy registered a growth rate of four percent. At the end of last year, the gov-

ernment estimated that Moldova's economy has chances to grow in 2018 due to the fact that in the road infrastructure development and energy investments are foreseen.

As estimated by Germany Trade and Invest (GTAI), the Republic of Moldova further proceeds with its course of growth. However, according to the analysis, the country falls short of the International Monetary Fund's expectations. Presumably the dynamic is too low to start a catching-up process with the East European members of the European Union. The parliamentary elections are due in November 2018. Those elections should further the country, which is divided between the EU and Russia. The western givers hope for a more precise positioning towards the EU.

According to the information supplied, the investment activity will presumably gain momentum in 2018, supposes GTAI. It has already been shown in 2017 that due to improved access to external sources of financing public investments have been increased. Apparently, in 2018 an extended skill to implement projects is especially due regarding road infrastructure. The building industry should profit from major public investments. There is the possibility that private investments pursue and hopes are pinned on that. According to GTAI, major challenges are generated especially by corruptions and deficiencies regarding the infrastructure. In terms of cost aspects, export-oriented and foreign direct investments would remain quite attractive.

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## Basque Country: On Its Way to a European Reference Region

Basque Country – or in Basque: Euskal Autonomia Erkidegoa – is an “autonomous” region in Spain. The habit of waste recycling in this “Autonomous Community” is more common compared to Spain as a whole.

According to official figures, a high percentage of Basque families recycle paper and cardboard (92.3 percent), glass (91.6 percent) and plastic as well as metal (90.2 percent), while the separation of organic waste is much less widespread (32.2 percent). Collecting exclusively organic waste is implemented to a certain extent only in Bizkaia (43.1 percent), in medium-sized (50.8 percent) and small (45.3 percent) municipalities, and it is lagging rather behind in Álava (27.9 percent) and, above all, in Gipuzkoa (16.8 percent). In Spain as a whole, the recycling of paper, glass, plastics and metal is between 70 and 75 percent less than in the Basque Country, while the habit of separating organic waste is higher (60 percent).

The Country follows the Waste Framework Directive, adopted the “Basque Environmental Strategy for Sustainable Development (2002-2020)” identifying “responsible management of resources and waste” as one of its goals and published the “Plan for the Prevention and Management of Waste in the Basque Autonomous Community 2020”. Its main objectives include the reduction of the total amount of waste generated by ten percent for 2020, the increase of the selective collection and separation of waste to at least 75 percent for 2020 and set up collection systems for problematic waste streams, and the progression of the proportion of waste which is prepared for reuse, recycled and recovered to 60 percent by 2020.

### Action Programs scheduled

The Plan – based on figures of 2010 with an amount of waste generated of 5,430,279 tons – indicates five sectors of activity responsible for 94.5 percent of all waste produced: Metal manufacturing and processing sector (32 percent), construction sector (23 percent), municipal waste and similar (20 percent), paper and wood sector (11 percent), and finally the water and waste treatment sector (10 percent). It showed, that the treatments



Photo: pixabay

of recovery (51 percent) and disposal (49 percent) were applied in similar percentages. 47 percent of the waste produced was sent to landfill; 45 percent recycled; six percent used to energy recovery and <0,1 percent incinerated. And admittedly hazardous contaminated land, salt slags from the secondary smelting of aluminum, halogenated waste and surplus treated waste such as organic matter had to be exported.

### New business opportunities encouraged

Five so-called Action Programs were scheduled by the Plan and funded by 6,727,000 Euro: for Prevention (41 percent), for Selective Collection and Separation (six percent), for Preparation for reuse, Recycling and Recovery (29 percent), for Optimizing Disposal (22 percent) and for Exemplary Behavior of Authorities and Good Governance (two percent). And several “Circular Economy and Waste Recovery Demonstration Projects” were budgeted by 12,5 percent of the total envisaged for the Plan. The projects were funded by up to 70 percent and limited to 30,000 Euro and stayed in constant and close collaboration and monitoring to the Department of Environment and Regional Policy. Eight public-private partnership projects followed the first call in 2011 and

intended – among others – a pulse combustion drying for de-inking sludge, the recovery of aggregate iron, steel and ashes through incineration of wastewater sludge, a DCW recovery in manufacturing and use of soil-cement and gravel-cement, an optimized “washing closed circuit and reuse of cleaning rags and clothes impregnated with hazardous substances”, and the development of extrusion profiles for electrical cabling plastic waste.

The results created additional demand for solutions. A “Circular Economy Demonstration Projects” initiative was launched in 2014 and repeated calls in 2014, 2015 and 2016. It oriented on the “2020 Waste Prevention and Management Plan” and the “Environmental Framework Programme for the Basque Country 2020”. Its basic objective was to establish new solutions in the market and encourage business opportunities in the circular economy. Arising from various “Competitive Intelligence and Technology Watch” studies, Ilobe – the Basque Environmental Management Company – had discovered new business opportunities. The opportunities were found in secondary plastics, metal waste, used fireproofing material, critical materials, reuse of automotive components and remanufacturing of capital assets, Ilobe gave account.

## Successful investments

According to the preliminary report from December 2016 regarding the 36 Circular Economy Demonstration Initiatives, the projects could be classified based on their level of transferability to other areas of industry, the intensity of the collaboration between companies in the value chain, the level of innovation and the relevance of public sector collaboration, so that, beyond financing, the solutions demonstrated could become established in the market. They covered the whole range of material treatment from the automotive industry and electrical equipment over metals until plastic, paper and textiles.

The demonstration projects helped to accelerate the circular economy in the metal and construction/works sectors, both responsible for steelworks slag from thermal processes of the metallurgy industry and paper-pulp sludge from the paper sector and adding up to more than 45 percent of all waste generated in the Basque Country. And they were successful: A forecast of results shows that an estimated 276,000 tons of waste would annually be diverted from landfill and would be upcycled from low-value recycled material. The potential turnover of all new business solutions totals at 38.7 million Euro. In other words: Each 100,000 Euro invested by the public is estimated to result in 15,330,000 saved tons of material per year and in a 2.15 million Euro turnover.

## A new economic model

“The Basque Country is making a commitment to a new economic model based on the Circular Economy ... – a new economy based on the

principle of ‘closing the life cycle’ of products, services, waste, materials, water and energy”, SPRI, the Basque business development agency, emphasizes. This does not only relate to the aforementioned projects but describes the existing waste management sector as well. There are several main companies like Indumetal Recycling, an industry specialist with extensive experience in the management of WEEE; FCC – Ambito, dedicated exclusively to the management of industrial waste of all kinds, both hazardous and non-hazardous; and Eko Rec, a company specialized in the recycling of PET – its R&D department is involved in research into new applications for materials that are not yet recyclable.

Regarding treatment plants, the Kooperera Reusing Center is the first comprehensive state plan for the re-use of all types of objects and goods such as clothing, shoes, bazaar, toys, books, electronics and appliances. The treatment plant proposes a comprehensive solution in the field of waste recycling and has been listed among the best regional case studies in Europe. Zabalgarbi’s urban solid waste energy valorization plant makes use of innovative technology for the energy valorization of this type of waste, which has allowed for increasing its energy performance in 87 percent compared to other conventional urban solid waste plants of the same capacity. And in 2015, the building of a waste-to-energy & MBT treatment plant for 200,000 tons per year in San Sebastian was sealed. Finally, the Basque Ecodesign Center delivers know-how and innovation, constituted in collaboration between private sector companies and the Basque Government, to boost product eco-

innovation in the supply chain of the Basque industrial sector. The center helped to involve eight major Basque multinationals to employ ‘green supply chain management’.

## Circular economy advancing rapidly

“Due to its small size and intensive industrial activity, the Basque Country is a region in which the circular economy is advancing rapidly”, Josean Galera, deputy environment minister for the Basque government, underlined already in 2014. The country’s import-dependency of 75 percent could be offset by doubling material productivity, waste flow disposal bans and waste recovery solutions. In his perspective, the country could satisfy all the requirements “for becoming a ‘guinea pig’ region for a circular economy initiative”. The same goes for SPRI stressing that “the region is a world-class area in Europe in the field of Eco-industries and the Circular Economy”.

According to SPRI, the Basque Country is making a commitment to a new economic model, facilitating the production of goods and services while reducing consumption and waste of raw materials, water and energy sources. A new economy based on the principle of “closing the life cycle” of products, services, waste, materials, water and energy. With a series of far-reaching competitive advantages, Basque Country is to position itself as a European reference region in the circular economy, and it facilitates the attraction of investment, talent, technology, and development of new strategic projects, the “Invest in Basque Country” – website emphasizes.

## New Zealand: New Facility for Tire Recycling

Waste Management New Zealand Limited has realized a new tire recycling facility in Wiri, Auckland. With support from the Ministry for the Environment’s Waste Minimization Fund, the company has invested in new tire processing equipment from the United States, expanding the processing capacity of the existing plant

by 250 percent. “This will lead to the shredding of 30,000 tons per annum or three million car tires,” a press release informed.

Some 60,000 tons of tire waste is generated annually in New Zealand from 4.2 million cars and trucks. According to Waste Management, its processing

facility provides a local solution for these tires, with the shredded material being supplied for re-use in manufacturing as tire-derived fuel (TDF), reducing waste stockpiling and turning a discarded resource into energy. The company plans to open another tire recycling facility in the South Island in late 2019.

## Australia: Price Erosion and Too Much Waste

**In Australia, states and councils in the country try to cope with the recycling crisis induced by the ban of the People's Republic of China.**

As reported by Australian media, the import restrictions exclude 99 percent of the recyclables that the country previously sold to China. According to the online publication SmartCompany, in 2017 Australia exported an estimated amount of 3.5 percent (or about 1,248 million tons) of all recycling materials collected from households, business and industry, among them 920 million tons of paper and 125 million tons of plastics. "This represents around 65 percent of the export market for each," Jenni Downes, research consultant at the Institute for Sustainable Futures of the University of Technology Sydney, described the situation. The contamination rate of Australia's curbside recycling "averages between 6 to 10 percent and even after sorting at a recycling facility is generally well above China's 0.5 percent acceptable threshold".

Australia has limited local markets for household recyclables like paper, plastics and glass. This is the reason why the country relies on overseas



Photo: pixabay

markets like China to buy and reprocess the waste. "Losing the market for a third of our paper and plastics – as have many other industrialized countries – has sent shockwaves through the global recycling market," Downes informed. Oversupply has caused the average price of mixed paper scrap to

fall from around 124 Dollar per ton to zero Dollar per ton; the average price of scrap mixed plastics has fallen from around 325 Dollar per ton to 75 Dollar per ton (1 Australian Dollar = 0,75 US-Dollar). For many recycling companies, this would mean that the money they could make from curbside recy-

## Australia Intends to Increase Recycling

**In response to China's restrictions on recyclable waste, Commonwealth, state and territory environment ministers have agreed to cut Australia's supply of waste and increase the country's recycling capability as well as the demand for recyclable products.**

In April this year, Australia's Minister for the Environment and Energy, Josh Frydenberg, and Assistant Minister for the Environment, Melissa Price, announced that 100 percent of Australian packaging will be recyclable, compostable or reusable by 2025 or earlier. As reported, to increase the demand for recyclable waste, where appropriate, the recyclable materials in goods purchased by governments – such as paper, road base and construction materials – are to be increased. Following the success of television, computer, tire and oil product stewardship schemes, the ministers also agreed to fast-track the development of new product stewardship schemes for photovoltaic solar panels and batteries.

In addition, Australia plans to invest in waste-to-energy, building on the around 200 million Dollar already invested in this area. "Generating energy from waste that is unable to be recycled is common in other countries, particularly in Europe," the information said.

According to news agency Reuters, in Australia, about 30 waste-to-energy projects are operational, mostly confined to small incinerators and co-generation plants, though a handful of larger projects are on the drawing board. For example, the future waste-to-energy plant in Kwinana (region Perth) is expected to start the commissioning phase in the fourth quarter of 2020 and be fully operational in the second quarter of 2021, the newspaper The West Australian gave account. The aim of the 400 million Dollar project is to process 400,000 tons of waste a year and to generate about 40 MW of energy.

cling “will now be less than the cost of providing the service”.

### Short-term solutions

According to Jenni Downes, traders have been able to sell paper and plastics to other Asian countries. She expects that this trade will stop as well as these countries are likely to reach their maximum capacity. Other recycling companies are storing the materials and hope, that “a better option becomes available soon”.

The reader also learns that there were “some 200 ‘dangerous’ stockpiles” in the Victoria state. A major recycling company stopped “accepting recycling from the collection contractor for ten regional Victorian councils, while other councils face increased fees. In response, the Victorian state government unveiled a 13 million Dollar rescue package to help councils meet increased costs until June when they can increase rates (which are expected to increase by 4.5 percent)”.

New South Wales has temporarily relaxed stockpile limits to allow greater

short-term storage. As the rates in this state are capped, passing costs onto residents is not an option. To prevent a number of councils from abandoning curbside recycling, the New South Wales government has announced 47 million Dollar of funding to help industry and councils. “However, this is money diverted from funds already aimed at better managing waste throughout the state,” the scientist gave account.

While the Western Australian government has created a task force to look at solutions, the South Australian government has announced a support package. More than 12 million Dollar will go towards South Australian councils and the recycling industry to help them deal with the fallout of the Chinese ban, the Australian tabloid-format newspaper *The Advertiser* reported in May this year. The package is valid for the next two years. It will be made up of 5.8 million Dollar in infrastructure grants for local government and industry to maintain and improve the capacity of South Australia’s recycling systems, a five million Dollar loan scheme to support projects with large capital requirements that



can have an immediate impact on local reprocessing of targeted waste, 500,000 Dollar to help transport of recycling in regional areas, 300,000 Dollar for market development grants and 800,000 Dollar toward a state-wide education campaign around recycling. In doing so, South Australia intends to avoid “what took place in Queensland, where one of its biggest councils, Ipswich City, announced it would dump all recyclable materials from household yellow-top bins into landfill”, the newspaper reported.

## USA: Recycling Generates 117 Billion US-Dollar per Year

The recycling industries contribute to USA’s economy according to a study on behalf of Washington-based Institute of Scrap Recycling Industries (ISRI), Inc.

In 2017, the independent economic consulting firm John Dunham & Associates conducted the analysis on the economic impact of the national recycling industries. The study revealed that the branch is responsible for more than 534,500 direct and indirect jobs in the country. Direct jobs include those in facilities that process scrap materials into usable commodities. Indirect jobs come from those that supply machinery, equipment and services to processors, and the wages and taxes paid by the scrap recyclers to their workers and suppliers.

In addition, the industry generates more than 13.2 billion US-Dollar in federal, state, and local tax revenue annually. The study also revealed that the scrap recycling industry provides

for 0.63 percent of the national’s total economic activity – nearly 117 billion US-Dollar. According to the information, this is making the United States’ scrap recycling industry similar in size to the book publishing industry, the dental industry and the automotive repair industry.

Even the export activities create value: In 2017, more than 40,000 jobs were “directly supported by the export activities associated with the processing and brokerage operations of scrap recyclers operating in the United States”, the authors of the study informed. Were it not for these export markets, “many materials, including post-consumer paper and electronics would probably not be recycled at all simply because there is not sufficient de-

mand for them in the United States”. The authors also emphasized that the national scrap industry is a link in the global supply chain “for the growing demand of all manner of commodities ranging from iron and steel to paper; nonferrous metals such as aluminum, copper, and zinc; plastics; electronics; rubber; and more”.

As reported, in 2016 the industry exported nearly 17.5 billion US-Dollar in commodity-grade scrap products to more than 150 countries, “significantly helping the U.S. balance of trade”. According to the study, in terms of volume “scrap materials are among the nation’s largest commodity exports, in line with other important commodity export products like grain and corn, cotton, timber, and petroleum”.

## Processing of Electric Motors and Copper “Meatballs”

German-based company Sicon – specialized in the development of systems related to scrap processing and metal separation – explains how new equipment solutions allow for a flexible system that can easily adapt to changing market conditions.

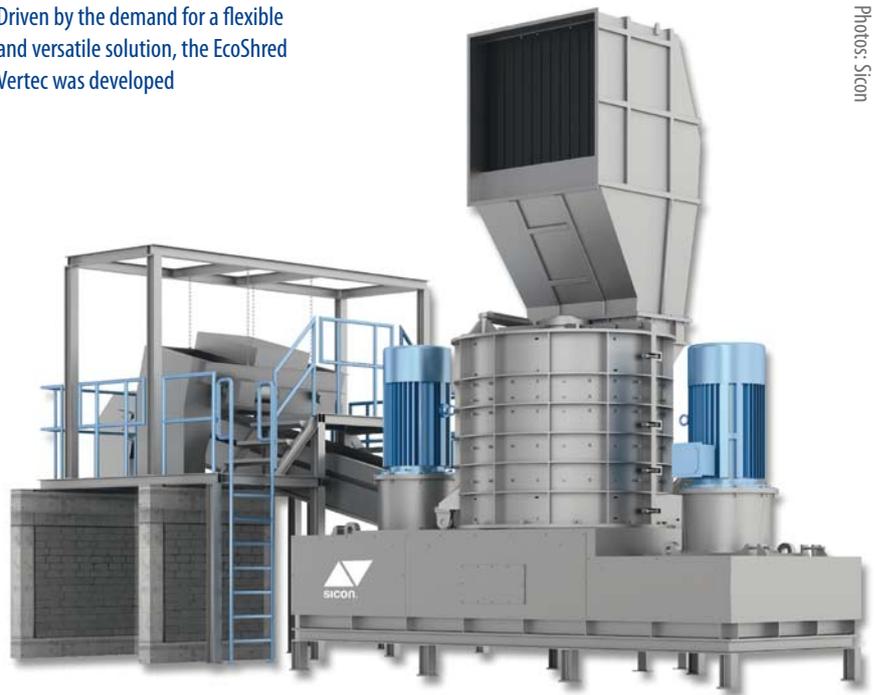
The main component of a shredder downstream is a hand-picking-station to ensure complete removal of copper-containing materials from scrap. Hand-pickers, depending on the efficiency of the individual ones, are usually able to remove 0.5-0.8 percent copper from shredder scrap.

Modern shredder operations facilitate and optimize handpicking with cutting-edge equipment. One such machine is Sicon’s PrimeScrap. The PrimeScrap separates the shredded scrap into two fractions based on ballistic and magnetic properties of the material. With this approach, 70-80 percent of the material flow is clear of any copper-containing materials or material-compounds and can be directly discharged without further handpicking. The remaining 20-30 percent can now be better distributed on the conveyor belt and presented to the hand-pickers, making the hand-picking task leaner and more efficient as the workers now have less material to process.

Until recently, the recovered copper meatballs have been mainly exported as local demand for these without further processing was non-existing. Current Chinese restrictions on imports have influenced national markets in recent months as increasingly marketing the copper meatballs becomes more difficult. Although they do not necessarily mean that China will no longer import scrap metal, the export to China becomes increasingly difficult and pressure on pricing is already notable.

Consequently, more scrap and metal-processing companies are entering the market for non-ferrous recovery from copper meatballs and electric motors. These processing companies supply the recovered metals as raw material directly to smelters. In most cases, this practice has become more lucrative than exporting the non-ferrous metals. The increased added-value within the company guarantees

Driven by the demand for a flexible and versatile solution, the EcoShred Vertec was developed



Photos: Sicon

a long-term marketing success with generated non-ferrous material and helps to establish direct customer contact which often leads to new business opportunities.

### Flexible solutions with a modular concept

The main requirement for economical processing of meatballs and electric motors is a system’s flexibility. Often copper meatballs cannot be sourced in sufficient quantities to justify a large investment. However, there are multiple other materials that can be processed with the same equipment for further recovery. Driven by the

demand for a flexible and versatile solution, Sicon has developed the EcoShred Vertec and has already installed multiple units successfully.

Many mixed-metal fractions can be introduced to the EcoShred Vertec as input:

- Copper Meatballs
- Electric motors
- Transformers
- Radiators
- (ASR = Automotive Shredder Residue) Mixed cables & Insulated Copper Wire (ICW)
- Household Appliance
- Irony Aluminum

Economically-viable processing requires the right equipment and a knowledgeable partner who has the system-understanding to build and configure a process to customer-specific needs. Each customer has individual requirements, which have to be met to ensure a successful investment.

Some of these specification requirements are:

- Equipment and system as a whole must be flexible to cope with various input materials,



EcoShred Imtec balling mill

- quality of end products must meet exact end-buyer specifications without exception,
- processing- and operating costs must be low in order to cope with market fluctuations and continue to be profitable,
- equipment must be heavy-duty built and remain robust throughout its entire life cycle; the partner company's offered repair and maintenance service ensures equipment availability at all times,
- automatization warrants continuous transparency, both technically as well as economically.



The products

With all of today's demands towards electric motors and meatball processing, Sicon meets all with its flexible solutions with a modular concept. First, the above-described EcoShred Vertec, available in four different performance configurations ranging from 90 up to 464 kW (kilowatt) or 120 HP and 620 HP (horsepower) retroactively, liberates the material. By Sicon's account, the Vertec tools have been specifically designed for maximum smooth liberation. The gentle size-reduction is especially important

for recovered aluminum from electric motors as it is required to be as large as possible. The following refining modules include the EddyPro eddy current as well as the EcoShred Imtec balling mill. Additional steps in the refining process include density-based separation which yields metallurgical clean copper and aluminum grain. A separate module is available for initial cable processing and refining with the above-described processing steps. Sicon's approach with the presented equipment solutions allows for a

highly-flexible system that can easily adapt to changing market conditions.

"We at Sicon provide support to our customers from the initial idea throughout the individualized development and design phase up to the realization and start-up of equipment", the company underlines. "After a project, our sales engineers continue to provide support on scrap and metal processing matters."

➔ <https://sicontechnology.com/en/>

## New Research Project Regarding Fuel from Waste Tires

**The aim of the ongoing project in Sweden is to evaluate three different approaches for upgrading pyrolysis oil from tires to more high-quality products, with the main focus on co-upgrading to fuels together with fossil raw materials in refinery processes.**

Upgrading of pyrolysis oil from Scandinavian Enviro Systems' process is carried out in the various scales of RISE test and pilot facilities in Piteå and Södertälje. The project is run by RISE together with the companies Scandinavian Enviro Systems and Ragn-Sells (a collector and recycler of discarded tires in Sweden) with support from Vinnova, a Swedish government agency that administers state funding for research and development.

Recycling of end-of-life tires represents both a big challenge and a great opportunity. Today the old tires are used for their energy content and for making granules used as fillings in artificial turf, to name but a few examples. However, there is potential for more high-value recycling than direct combustion. At the Scandina-

vian Enviro Systems' recycling plant in Åsensbruk, discarded tires are recovered in a pyrolysis process, where carbon black, pyrolysis oil, steel and gas are obtained as products. The carbon black, which is today the main product of the process, is sold to the rubber industry. According to Scandinavian Enviro Systems, the pyrolysis oil has great similarities with fossil oil and therefore has potential to be used for the production of – for example – transportation fuels. Natural rubber in the tire also makes the pyrolysis oil partially bio-based; it consists of 48 percent of bio-oil. As reported by the Scandinavian Enviro Systems, the company is currently engaged in active dialogues with stakeholders, such as recycling actors, tire manufacturers, compounders, and industrial engineering facilities, on six continents.

"In recent years, the general materials recycling market has quite clearly shifted. More than ever, political and fundamental market forces are pushing the world to focus more clearly on reducing resource consumption and demand that incineration be replaced with materials recycling," Enviro System's CEO, Thomas Sörensson, was quoted. "In addition to our recycled materials' obvious environmental benefits, they've been demonstrated to be on a par with virgin carbon black across a wide range of applications and compounders. Considering that the global market for carbon black is estimated to exceed 25 billion dollars by 2020, the potential for both Enviro's technology and our recycled materials is inarguable."

➔ [www.envirosystems.se](http://www.envirosystems.se)

## Tiger Depack Reduces Waste in Paper Pulp

At MIAC 2018, the 25th International Exhibition of Paper Industry taking place from 10 to 12 October in Lucca (Italy), Italian company Cesaro Mac Import will present its new machine for paper mills which uses recovered paper.

Recovered paper is an important raw material for producing new paper. In some parts of the world, the utilization rates are quite high – for example in Europe. Each year, millions of tons of paper are recovered from differentiated waste collections. In stock preparation, the sorted secondary raw material is dispersed in pulper water to separate fibers and ink as well as other components (for example plastics), which as waste often is disposed of with expenditure. In order to solve this problem, Cesaro Mac Import – owners of the Tiger Depack brand – have developed the “Tiger Depack HS 20 – Paper Pulp Solution”. According to the information, the machine is able to recover up to 70 percent in weight of reusable material, which can be fed back into



The machine is designed to operate both in manual and in automatic cycle

production. In a single process, the quantity of material currently sent for disposal at a landfill or incinerator is reduced. The “Tiger Depack HS 20 – Paper Pulp Solution” is meeting the

needs of any paper mill, the provider is convinced.

➔ [www.tigerdepack.com/en/company/hs20-pps-en.html](http://www.tigerdepack.com/en/company/hs20-pps-en.html)

Photo: Cesaro Mac Import

## Patented Process to Separate Plastics Mix

As China has implemented their restrictions on the import of waste streams, other South-East-Asian countries are following their lead. As a result, recyclers in the US and Europe are experiencing increasing difficulties exporting their plastic residues.

With no end date for the import restrictions in sight, recyclers are forced to adapt to the current situation or risk having to shut down their operations. To facilitate the necessary adaptations, Dutch company Ad Rem has teamed up with Galloo Plastics to develop a solution. “With the Ad Rem plastic separators, clean and pure plastic streams can be obtained,

ready for sale to domestic parties or for export as a resource,” the provider underlined.

Ad Rem has obtained an exclusive license from Galloo Plastics that enables them to commercialize the patented process to separate a plastics mix originating from ASR (Automotive Shredder Residue) or WEEE waste into three fractions: chlorinated plastics, RDF plastics (fuel) and recyclable plastics (mix of PE, PP, ABS, PS). This is done by separating the plastics on several densities in a specially developed separation tank. The medium used in the separators is water with a pH-neutral additive that is environmentally friendly.

“By using this additive instead of salt, the negative environmental effects are avoided while creating a very stable medium,” the company assures. “Furthermore, the additive can be

fully recovered from the rinse water for re-use.” As reported, Ad Rem is also able to deliver equipment to further separate the recyclable plastics. Using this technology, the PE/PP can be separated from the ABS/PS. “This allows recyclers to upgrade their plastic waste streams sufficiently in order to provide a usable end product for their customers or for themselves.”

### Future development

Various studies have shown that only a small percentage of all ASR and WEEE plastics is being recycled, even though these fractions still contain a large amount of high value recyclable plastics. “With Ad Rem’s newest technology, it is now possible to process these plastics at a high capacity in a fully automated separation plant,” the provider says.

➔ [www.adrecyclingmachines.com](http://www.adrecyclingmachines.com)

Photo: Ad Rem N.V.



# Fully Automatic Press for Paper & Co.

The German manufacturer HSM GmbH + Co. KG has added the fully automatic channel baling press HSM VK 6215 to its product portfolio.

According to the provider, this press model is particularly suitable for professional waste management or larger industrial applications – with high throughput capacity. With a pressing force of 620 kN (kilonewton), the HSM VK 6215 is suitable for a wide range of materials such as cardboard, paper and film, as well as PET bottles. Thanks to the large filling opening of 1500 x 970 millimeters, bulky material is also no problem for the channel baling press, HSM emphasized.

The bottom of the compaction chamber, as well as the bottom and side panels of the baling chamber, are made of high wear-resistant steel. Depending on the material, the highly compressed bales reach a weight of up to 550 kilograms, have a bale mass of 1100 x 750 x max. 1200 millimeters and are held together by a fully automatic, five-fold wire strapping.



New bale measuring system for exact determination of the bale length

Photos: HSM

The fully automatic channel baling press HSM VK 6215 is the economical solution for professional waste disposers and industrial applications

bale weights guarantee efficient use of the truck," the South German manufacturer assures. "The optimally coordinated software for the respective material types guarantees a high bale quality – even with frequent material changes". The HSM VK 6215 with a frequency-controlled drive is available as an option. This drive "makes

a significant contribution to environmental protection and efficiency, making it possible to save up to 40 percent of energy costs compared to conventional drive technology – with the same performance", the company underlined.

➔ [www.hsm.eu](http://www.hsm.eu)



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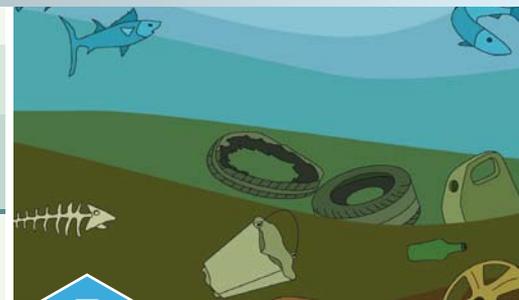
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## Artificial Intelligence for Paper Sorting

Technology provider Bulk Handling Systems (BHS) has expanded the Max-AI AQC (Autonomous Quality Control) product line with the release of the AQC-2 for paper sorting applications.

The Max-AI technology employs artificial intelligence (AI) to make material identification and selection decisions. According to the information, AQC-2 features two robotic screening units and is able to sort on belt widths up to 72" (1.800 millimeters).

The new capabilities coincide with the industry's demand for technology to create material purity. "The AQC-2 sorts at speeds superior to manual sorting while recovering cardboard, containers and plastic film



and removing contamination to create a clean new product," BHS gave

account. The novelty would complement BHS' Tri-Disc technology and NRT optical sorters to fully automate the quality control process for paper and containers. "The level of automation possible with Max-AI technology will significantly lower operating costs – especially while running multiple shifts – while adding production and quality capabilities that surpass those of manual sorting," the provider underlined.

➔ [www.bulkhandlingsystems.com](http://www.bulkhandlingsystems.com)

## Paper Mills Generate Their Own Solid Recovered Fuel

Two Untha XR waste shredders are now in operation for VPK Packaging Group in continental Europe, shredding pulper ropes (ragger wire) as part of a closed loop paper production process.

Manufacturing 900,000 tons of paper per year from 100 percent recycled materials, VPK's mill in Dendermonde (Belgium) and Blue Paper Mill in Strasbourg (France) generate a waste by-product including complex pulper ropes. A pulper rope – or ragger wire – is used for collecting and removing impurities such as plastic sheets, films, tapes and wires from the pulp. This multifaceted 1:3 metal and plastic material was previously treated off-site by a third party. However, the new shredding investment means that both plants can now process the waste themselves to manufacture an alternative fuel for their own energy generation.



At Dendermonde, untreated pulper rope waste is being fed into an Untha XR3000C shredder via a ceiling-mounted claw grab at a throughput rate of five tons per hour. A screen ensures homogenous particle sizing before the fraction drops onto a horizontal discharge conveyor. The shredded material then passes up an elevated conveyor to an electro-magnetic FE-separator, where metals are extracted for onward sale and recycling. The finished product is an SRF specification fuel that VPK uses in its own on-site Waste-to-Energy facility.

The Solid Recovered Fuel travels via a final horizontal conveyor into a bunker with walking floor to feed the plant. A level detector senses when the vessel is filled by 70 percent and the conveyor auto-reverses so that excess material can instead drop into a storage bay.

As a turnkey package, the solution – including control cabinet room, steel support, service platforms, stairways and crane sourcing – was supplied by Untha. The tender stated a system capable of handling 5,800 tons per

annum (only during daytime working hours), but the VPK team is already confident that this target will be surpassed, the Austrian shredding technology company reported.

Untha's machine delivery in the Blue Paper Mill – which is co-owned with German-based Klingele Papierwerke – is virtually identical, apart from the fact that it will be handling approximately 4,500 tons of material per year.

➔ [www.untha.de](http://www.untha.de)

## Silkeborg Affald & Genbrug Optimizes EPS Recycling

By using the right technical equipment, Silkeborg Affald & Genbrug was able to increase the recycling rate of used expanded polystyrene (EPS).

In the Danish town Silkeborg (located in the middle of the Jutlandic peninsula) approximately 30 tons – equivalent to more than 60 truckloads – of EPS are collected per year. Previously, the expanded polystyrene – better known under the brand name Styropor – has been a large part of the combustible fraction but is now compacted on site and sold for recycling with reduced transport costs. The compacted EPS blocks can now be loaded on just three trucks, and the optimization of the weight of the combustible fraction saves many trips to the incineration plant. Silkeborg Affald & Genbrug is using a compactor provided by Danish manufacturer Runi A/S. According to the information, it takes a few hours to compact the EPS, but this is a job that anyone can do. The compactor would work reliably – and provide the recycling of more plastic, which is an environmentally friendly result.

“During design, assembly and commissioning, Runi has been a professional supplier who has delivered agreed quality and function at the agreed price,” engineer Erich Beck at



Silkeborg Affald & Genbrug, responsible for the purchase of the compactor model SK370, was quoted. “In addition to knowledge sharing with Danish colleagues, we have had the pleasure of visits from Finland, Norway and Israel during the five years of the plant.” Runi A/S is a Danish screw-compactor manufacturer, located in a region with a long tradition for

eco-technology, machine manufacture and metalwork. Its machines are used to add value to a large number of different materials, either by making them suitable for recycling and onward sale or by reducing costs of transport, disposal or energy consumption.

➔ [www.runi.dk](http://www.runi.dk)

## ISWA 2018 World Congress

October, 22 – 24, 2018, Kuala Lumpur (Malaysia)



The three-day event is jointly organized by the International Solid Waste Association (ISWA) and the Waste Management Association of Malaysia (WMAM) with the support of the Malaysian Ministry of Urban Wellbeing, Housing and Local Government, Ministry of Energy, Green Technology and Water, Kuala Lumpur City Hall, Ministry of Tourism and Culture Malaysia and the Malaysian Convention and Exhibition Bureau.

The program will feature the socio-economic impacts of waste recycling, waste reduction, and health, safety, and policy regulation pertaining to recycling and climate change, the information says. It will also include areas of current interest such as marine and coastal waste management. The scientific program will culminate with a forum that will see key ASEAN ministers responsible for the solid waste management, participate in a dialogue to re-evaluate waste management policy and practices within the region.

As reported, the ISWA Congress annually attracts researchers, scientists, young professionals, and policymakers from around the world to network and exchange scientific and technical data policies and case studies on a wide range of solid waste management issues. “The Congress offers a critical platform to bring about positive action and cutting-edge innovation toward sustainable solid waste management with a think global, act local approach.”

➔ [www.iswa2018.org](http://www.iswa2018.org)

## World Resources Forum

February, 24 – 27, 2019, Antwerp (Belgium)

World Resources Forum (WRF) 2019 will be organized together with the Public Waste Agency of Flanders (OVAM), which is the principal authority in the Flanders Region of Belgium for sustainable management of waste, materials and soils. It will be held in the Flanders Meeting & Convention Center Antwerp (FMCCA). The conference will be organized in close cooperation with international partners

such as UN Environment, the European Commission, and other partners of the international WRF network, as well as with local partners such as the City of Antwerp, local authorities, environmental companies, sector federations, civil society and universities and knowledge institutions from the Flanders region. The general theme for the Forum is "Closing Loops – Transitions at Work". With this theme,

WRF 2019 wants to focus on hands-on sharing of best practices. "The vision and knowledge to close cycles and to evolve towards a circular economy is often already available," the homepage says. A necessary and urgent next step would now be to put theory and knowledge into practice for which networking with peers and other stakeholders could be a key driver.

➔ [www.wrforum.org](http://www.wrforum.org)

## EcoTech 2019

April, 2019, Astana (Kazakhstan)

The Central Asian International Exhibition for Environmental Technologies and Green Innovations, EcoTech, which should have taken place in April this year, will be postponed to April 2019; the date is to be announced. This trade fair is the main specialized exhibition in Kazakhstan and Central Asia, which will present international and domestic companies engaged in

collection, utilization, processing and disposal of industrial and domestic wastes, water treatment and wastewater treatment, recycling, gas, air and soil purification, resource-saving technologies, to name but a few. EcoTech's mission is to unite and develop ties between manufacturers of cleaning and processing equipment, traders, suppliers of goods and ser-

vices, and consumers – mining and processing enterprises of the oil and gas, mining, metallurgy, chemical, food, construction, transport, and other industries of Kazakhstan and of all Central Asian regions. The event is to promote the implementation of clean technologies and aid to "green" growth.

➔ [www.ecotech.kz](http://www.ecotech.kz)

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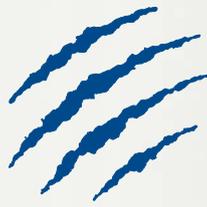
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\* Tiger DePack HS 5 GROUP

## THAT'S RIGHT! THE BIOGAS SOLUTION YOU CAN'T BELIEVE POSSIBLE



SSO: heterogeneous material originating from waste collections from the roadside, markets, shopping centres and large-scale retailers as well as from stations, ports and airports.  
**FAULTY/EXPIRED PRODUCTS:** Foodstuffs, cosmetics and detergents



### OUTPUT stream characteristics:

- With a near 100% recovery of the wet material, value can often be added to the dry fraction or redirected to the responsible chain
- The vertical separation system ensures the recovery of the highest quality material possible.

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