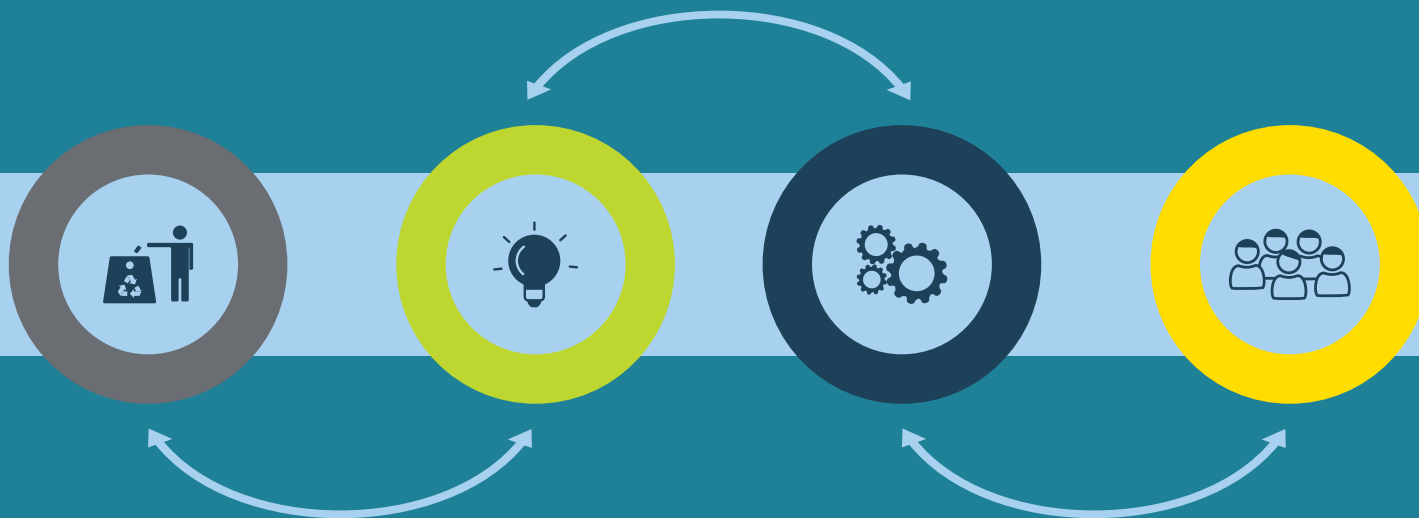



YOUR TRASH IS MY TREASURE

Best Practice Examples of the Circular Economy
in the Danube Region



A stream of cooperation

Project co-funded by European Union funds (ERDF, IPA)



“Every journey begins with
a single step.”

Lao-Tze

YOUR TRASH IS MY TREASURE

MOVECO presents innovative and inspiring best practices of the circular economy in the Danube region.

The best practice providers from nine different countries understand the need to perceive so-called waste as a valuable resource.

The examples range from ambitious technical solutions, like spray-foam can recycling, to creative design solutions, like jeans upcycling.

All these best practices show the benefits of circular thinking. Closing material loops is crucial for a positive future on our planet. First steps can be done by everyone – whether as a company or a consumer.

Enjoy the brochure and get inspired!

The MOVECO Consortium



Scan the QR Code or visit our MOVECO website to discover more best practices of the circular economy in the Danube region:

www.interreg-danube.eu/moveco



Circular Economy in a Nutshell

Waste is a human invention. In nature, all waste from an organism becomes food for another. Everything is recycled. Our current modes of consumption and production are linear.

Resources are extracted and processed into products, and when a product is no longer needed, it is discarded and typically ends up in an incinerator or landfill. Thus, valuable resources are lost.

A circular economy – on the contrary – aims at “closing the loop” and returning resources back into the material cycle.



Circular Economy by the Ellen MacArthur Foundation

The Ellen MacArthur Foundation strongly promotes circular thinking and is one of the most important ambassadors of the circular economy.

“A circular economy is restorative and regenerative by design, and aims to keep products, components, and materials at their highest utility and value at all times.”



Scan the QR Code or visit the website of the Ellen MacArthur Foundation to find out more:

www.ellenmacarthur-foundation.org

PRINCIPLE

1 “Preserve and enhance natural capital by controlling finite stocks and balancing renewable resource flows.”

PRINCIPLE

2 “Optimise resource yields by circulating products, components, and materials at the highest utility at all times in both technical and biological cycles.”

**“OUR MISSION IS
TO ACCELERATE
THE TRANSITION
TO A CIRCULAR
ECONOMY”**

PRINCIPLE

3 “Foster system effectiveness by revealing and designing out negative externalities.”



In Germany, about 25 million cans of polyurethane (PU) foam are consumed per year.



PDR Recycling collects used PU foam cans at its 2,500 collection points nationwide.

80%

The material recovery rate of a PU foam can is approx. 80%. These regained raw materials are returned into the production cycle.



Germany

Bavaria & Baden-Wuerttemberg

Closing the Loop: Innovative Recycling of PU Foam Cans

PDR has established an innovative technology to recycle PU foam cans. The company follows a holistic approach by recycling the can as well as its hazardous contents. This is unique on the European market.

Over almost 25 years, PDR has gained extensive expertise in material- and substance-based recycling and recovery of diverse types of products. One core business of the medium-sized Bavarian company is the processing of used polyurethane (PU) foam cans.

PU foam is widely used for insulation and sealing by both industry professionals and individuals.

Classified as hazardous waste under German law, the empty PU foam cans must be recycled. PDR provides an industry solution so that the producing companies can fulfil their legal responsibility.

The used PU foam cans are collected throughout Germany before they are transported to PDR to be processed.

PDR has taken a pioneering role. The company can be proud of its holistic technology, with a recycling rate of more than 95%.

Five products are recovered

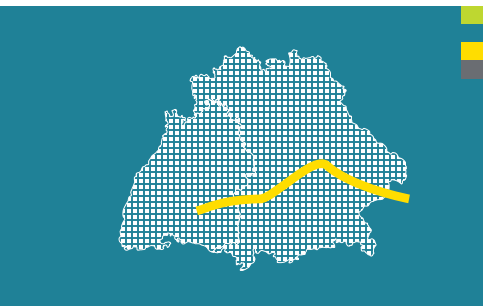


These five products are recovered from the returned cans: tin plate, liquified gas (TRIGAS®), plastic grist PE/PP, aluminium and prepolymer (PREPUR®).

PDR Recycling GmbH + Co KG

Am alten Sägewerk 3
95349 Thurnau
Germany

www.pdr.de



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20th

The twentieth ReVital shop was opened in Vorchdorf, Upper Austria, on September 1, 2017.



ReVital sold more than 940 tonnes of reusable goods in 2016. Thus, large mountains of waste could be avoided.

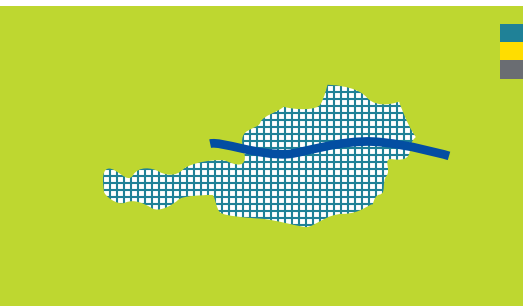


Repairing goods not only prevents waste but also saves money for consumers and empowers local economies.





ReVital
OÖ. Landesabfallverband
Schubertstraße 4/2
4020 Linz
Austria
www.revitalistgenial.at



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ReVital: Collect. ReVitalize. ReUse

ReVital is a well-established project in Upper Austria that combats the throwaway mentality and promotes the circular economy. Its motto is “Repairing and reusing products instead of dumping them”.

Supported by the government of Upper Austria, ReVital has built up a large network of recycling centres, processing facilities and shops. People can bring their old products – like electrical appliances, furniture, household goods and sports equipment – to 108 local recycling centres. The products in good condition are collected and „revitalized“ at eight processing facilities, where employees repair and refurbish the products as needed.

ReVital is proud of its 20 partner shops in all districts of Upper Austria, where the second-hand products are sold at low prices.

The ReVital logo on the revitalized goods means that they meet high standards with regard to proper functioning, completeness, cleanliness and hygienic safety.

ReVital employs around 360 people, including 176 who were recently long-term unemployed. Hence, the project not only conserves resources and reduces environmental impacts; it also supports social integration and job creation by helping many people re-enter the job market.

Reusable cardboard box



Since 2015, this reusable cardboard box has let ReVital pre-collect smaller items in people's homes.



CURADEN Slovakia sells several million CURAPROX toothbrushes per year. These represent some 52 tonnes of polypropylene.



Used toothbrushes are currently taken back in 19 shops and at a few dentists' offices. New collecting points are being added every year.

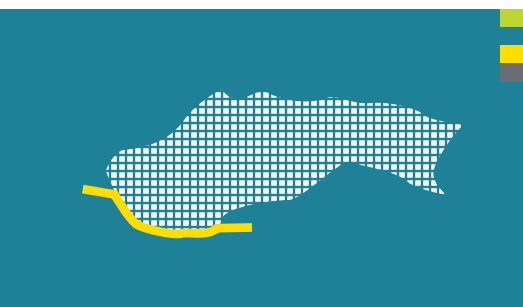


The goal of the company is to collect at least 10% of all toothbrushes sold per year.

CURADEN Slovakia s.r.o.

Na Výslň 17
82105 Bratislava
Slovakia

www.curaprox.sk



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Circularity & Toothbrushes: CURAPROX Goes Green

“Ekovir” is an initiative started by the Slovak branch of the company CURADEN, known mostly for its CURAPROX toothbrushes. The initiative supports the circular economy and corporate social responsibility.

Within this initiative, the company has a project called “Kolokefka” in which used toothbrushes are collected and recycled to produce waste sorting bins, which are then donated to Slovak schools. The company also cooperates with NGOs to educate students on how to sort waste correctly.

The company has the ambitious goal of producing toothbrushes that are disposable in home composting. Ideally, they will also degrade in salt water to prevent marine pollution.

To realize this goal, the project “CURAPROX Goes Green” was launched in January 2017. The Slovak branch and its Swiss mother company cooperate with scientists and innovators to identify a renewable material that has properties similar to polypropylene and is biodegradable in regular composts. Most of the currently existing materials only degrade in industrial composters (at $T > 60^{\circ}\text{C}$).

Discovering such a bioplastic is a great challenge. But the first research results of the Slovak University of Technology seem promising. The company hopes to begin testing prototypes in 2018.

CURADEN collection boxes



The CURADEN collection boxes are accepted by consumers. A few thousand toothbrushes were collected within the first 3 months.



In 2014, almost 35,000 tonnes of new electrical and electronic equipment entered the Slovenian market.



Typically, electronic products have an extremely short life cycle, and their waste is highly toxic.



Most electronic products are not recycled. The FAIR meter project researches how to increase circularity.



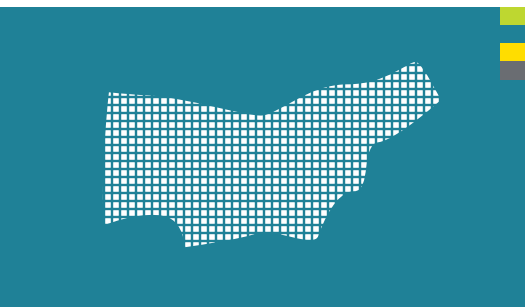


Slovenia

Iskraemeco

Savska loka 4
4000 Kranj
Slovenia

www.iskraemeco.com



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FAIR Smart Meter: Commitment to Circularity

Iskraemeco is one of the leading providers of smart metering solutions. To shift from a linear to a circular economic model, Iskraemeco forges new relationships with suppliers as well as customers.

Iskraemeco's portfolio includes electronic smart meters for gas or electricity consumption as well as software and communication solutions. The Slovene company has established a three-pillar strategy that incorporates sustainable development in both the company itself and its supply chain and partnerships.

Within its sustainability strategy, Iskraemeco seeks solutions to key issues facing the electronics industry: conflict minerals, scarce and toxic materials, unfair labour practices, intensive energy use and the increase in e-waste and resource consumption.

The company addresses these issues in the FAIR meter project as well as other activities.

Iskraemeco developed an innovative, modular smart meter platform, involving all aspects of the FAIR meter concept. The platform enables seamless integration of next generation smart metering functions into the smart grid concept. This platform addresses key challenges customers face as they transition into a smart grid environment.



<6€

Fashion is the second most polluting industry in the world. Labourers in the textile industry in Asia work for less than € 6 per day.



60% more clothes are bought today than in 2000. And the clothes are worn only half as long.

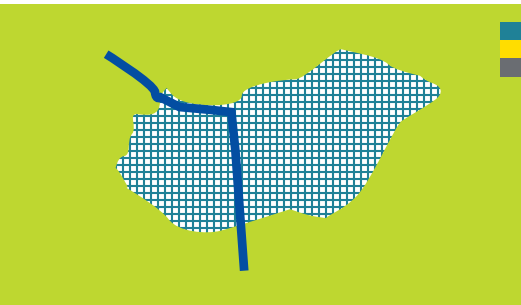


95% of all discarded clothing could be recycled, but only 10-20% is recycled worldwide.



Sharolta

Sörgyár utca 5
8800 Nagykanizsa
Hungary
www.sharolta.com



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UPCYCLED Fashion is as Good as New

Sharolta is a new ethical fashion brand established in Budapest in 2015. Sharolta makes upcycled denim clothes and bags that have an environmental impact up to 90% smaller than that of new clothes.

Denim accounts for around 5% of all textile waste worldwide. It is still a valuable resource when discarded as it contains 95-100% high-quality cotton.

Sharolta collects used jeans at several collection points in Budapest and turns them into beautiful clothes and bags. Compared to new clothing companies, Sharolta uses 50-90% less energy, raw materials and water for manufacturing.

The mission of Sharolta is to create upcycled fashion that is as good as – or better than – new.

The products are sold to companies and directly to consumers. Sharolta's clothes and bags are worn by people who seek to avoid fast fashion. They feel responsible towards the environment and express this by buying according to ethical fashion principles.

As Sharolta is passionate about making a difference, the brand also makes charity products like schoolbags for orphans in Africa.

Upcycled fashion from Budapest





Fabula was initially financed through the Moj Zaba Start competition for Green Business and a crowdfunding campaign on the Indiegogo platform.

30 kg

An average coffee shop produces around 35 kg of organic waste per month. This waste is too valuable to just throw away.



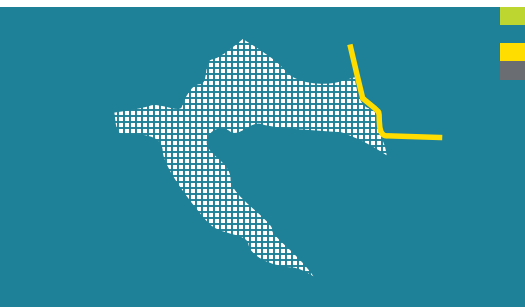
Fabula has already recycled 90,560 imperfect flower petals and the used grounds and leaves from more than 50,930 cups of coffee and 30,450 cups of tea.



FABULA C Ltd.

Pavleka Miškine 39
42000 Varaždin
Croatia

www.fabulaorganicpencil.com



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Closing the Sustainability Cycle: Fabula Pencils made of Coffee

The company Fabula C Ltd. produces pencils made from recycled organic waste from coffee, tea and flowers. Fabula calls it the most sustainable pencil in the world.

The pencil is not only made from these organic wastes, but the pencil shavings serve as plant nutrients (gentle fertilizer) and a new plant can grow out of a spent Fabula pencil.

When the pencil is too short to write with anymore, it needs to be dissolved in water for two days to release the seeds embedded in the top of the pencil. Afterwards, the solution with the seeds and nutrients can be poured into soil, and in two or three weeks, a seedling will emerge.

The product design of this pencil reflects a very holistic approach of eco-innovation and circular design. It has already won the prestigious Red Dot Award in the Green category; the A'Design Award in Milano, in the category Sustainable Products, Projects and Green Design; the Zagrebacka bank Green Business award and many more.

The Fabula founders learned about product development at the Technology Park Varaždin, where the startup also produced its first prototypes.

The company also provides pencils with individual company logos and other customized packages to inspire companies to go green and innovative with their business gifts.

Fabula grows



To become a vital new Incan berry plant, the old Fabula pencil needs high-quality soil and a pot with drainage holes.



About 12,000 tonnes of multilayer carton packaging are generated in Serbia annually.



These discarded tetra packs normally end up in Serbian landfills.

2.5 m² To produce 2.5 m² of Feplo's eco-boards, up to 20 kg of discarded tetra packs are used.



Feplo

Preljina bb
32000 Čačak
Serbia

www.feplo.rs



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Eco-boards: from Beverage Cartons to Construction Materials

The company Feplo manufactures waterproof eco-boards. This building material consists of pressed parts of recycled beverage cartons, which would otherwise end up in landfills.

These boards are not only 100% ecological, but they also fulfil extremely high requirements for shape stability, homogeneity and minimal changes in properties. In addition, the eco-board's many advantages include excellent workability, low weight, a fair price and great thermal insulation properties.

Unlike other board materials, the eco-boards are waterproof. Therefore, they provide optimal possibilities for modern construction – for indoor and outdoor conditions – and several other applications. This is a great advantage in the market.

These products were tested at Serbia's IMS Institute, where they were certified as meeting the physical damage and water resistance standards of the construction industry.

Feplo's eco-panels are environmentally friendly and healthy not only because they are based on beverage cartons, colloquially called tetra packs. They are also produced without adhesives, additives and formaldehyde.

The machines to produce these panels were engineered by Feplo. As this production process is unique to Serbia, Feplo can be proud of its innovative approach.



Each year, almost 30,000 tonnes of used batteries are put onto the Romanian market.



By returning used batteries through the collection-valuation network of Rombat, consumers reduce natural resource consumption.

83%

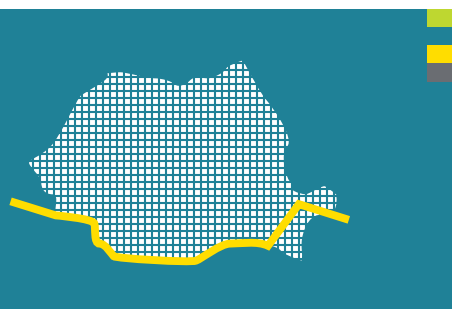
Over 83% of the battery weight is reused in new processes.



**SC ROMBAT SA -
working point Rebat**

Drumul Cetății 4, Bistrița
Bistrița-Năsăud, 420129
Romania

www.rombat.ro



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Valuable Lead Recycling from used Batteries

Lead is a precious natural resource that should be recycled. As a producer of lead acid batteries for vehicles, SC Rombat SA has committed itself to a holistic battery recycling approach.

SC Rombat SA collects the used batteries and processes them at their REBAT facility, located in Copsa Mica and certified to ISO 14001 (Environmental Management System).

The first tests of battery recycling at REBAT began in 2005. Since then, the lead extraction yield has constantly increased, with a current output capacity of up to 20,000 t/year. Since upgrading their production processes, the quality of Rombat's recovered lead is now similar to that of the biggest European producers.

The recycling process enables the reuse of over 83% of the battery weight. Plastic as well as lead and lead alloy are used in new batteries.

Through these processes, Rombat saves valuable natural resources for Romania and avoids the environmental pollution of discarded batteries. In addition to these ecological benefits, the recycling process lets Rombat sell its batteries at a lower price.



One tonne of glass made from waste saves more than one tonne of raw materials. Recycling one glass bottle saves the electricity needed to light a bulb for 4 hours.



By putting recycled glass back into production, zero waste is achieved. This only works if people deposit glass in designated containers.

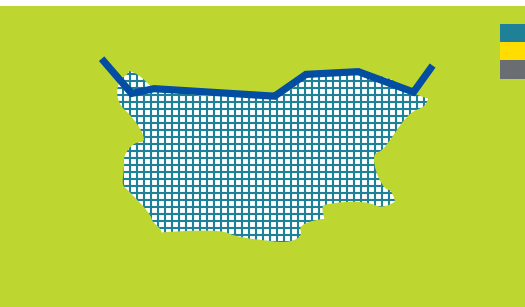


Glass can be endlessly recycled without losing its properties. The Circular Economy Package of the European Commission proposes a glass recycling target of 75% by 2025.



ECOPACK BULGARIA

Blvd. Tsarigradsko Shousse 60
1750 Sofia
Bulgaria
www.ecopack.bg



Modern Sorting Facility for high-quality Glass Recycling

ECOPACK BULGARIA is the biggest organization dedicated to recovering packaging waste in Bulgaria. It is proud of its advanced facility that sorts glass packaging waste by colour.

This first-of-its-kind facility in Bulgaria has been in operation since the end of 2016. It has the capacity to sort 100 tonnes of glass packaging per day – half of the total glass packaging on the Bulgarian market.

With its more than 1,200 members of manufacturers and importers of packaged goods, ECOPACK BULGARIA invested 2.5 million BGN (approx. €1.28 million) to upgrade the plant.

To guarantee high quality, the glass passes through several separation and purification stages. This innovative technology has halved the level of contaminants in the secondary glass that is ready to be reused in production.

It allows automated sorting by colour with magnetic and non-magnetic as well as air and optical separation. The supplier of this technology is KRS Recycling Systems GmbH, one of the most innovative players in Europe.

During the opening of the facility, the Minister of the Environment and Water, Ivelina Vassileva, stressed how much it benefits the environment by not only diverting glass from landfills but also reducing harmful emissions and the demand for natural resources.



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MOVECO Consortium

Project Coordinator

Chamber of Commerce and Industry of Slovenia (Slovenia)

Project Partners

Bavarian Research Alliance GmbH (Germany)

Bulgarian Chamber of Commerce and Industry (Bulgaria)

Business Upper Austria (Austria)

Chamber of Commerce and Industry Bistrita-Nasaud (Romania)

Cluster of Environmental Technology Bavaria (Germany)

Europa Consortium Regional Development Non-profit Ltd. (Hungary)

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Slovak Business Agency (Slovakia)

Slovak University of Agriculture in Nitra (Slovakia)

Tera Tehnopolis Ltd. (Croatia)

Associated Strategic Partners

Agency for Innovation and Technology Transfer (Moldova)

City of Osijek (Croatia)

Ministry of Economy of the Slovak Republic (Slovakia)

Science and Technology Park Belgrade (Serbia)



About MOVECO

"Your trash is my treasure"

This is the motto of the EU co-funded project MOVECO – Mobilising Institutional Learning for Better Exploitation of Research and Innovation for the Circular Economy. Sixteen partners from ten countries of the Danube region want to promote transnational cooperation to accelerate the transition to a circular economy.

The MOVECO consortium is working on topics like eco-design, producer responsibility and green innovation, supporting best practices in these areas.

Under the framework of the Danube Transnational Programme, MOVECO is an Interreg project, co-funded by the European Regional Development Fund (ERDF) and the Instrument for Pre-Accession Assistance (IPA).

The project duration is 12/2016–05/2019.



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Imprint

This brochure is a publication within the MOVECO project.

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This document has been edited by Christina Zegowitz (Trägerverein Umwelttechnologie-Cluster Bayern e.V.) on behalf of all project partners of the MOVECO project (project identity: DTP 1-349-1.1).

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SC Rombat SA
ECOPACK BULGARIA

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