Up2Circ – Boosting the uptake of circular business model, product and process innovation

Horizon Europe 2021-2027

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Up2Circ Info-kit

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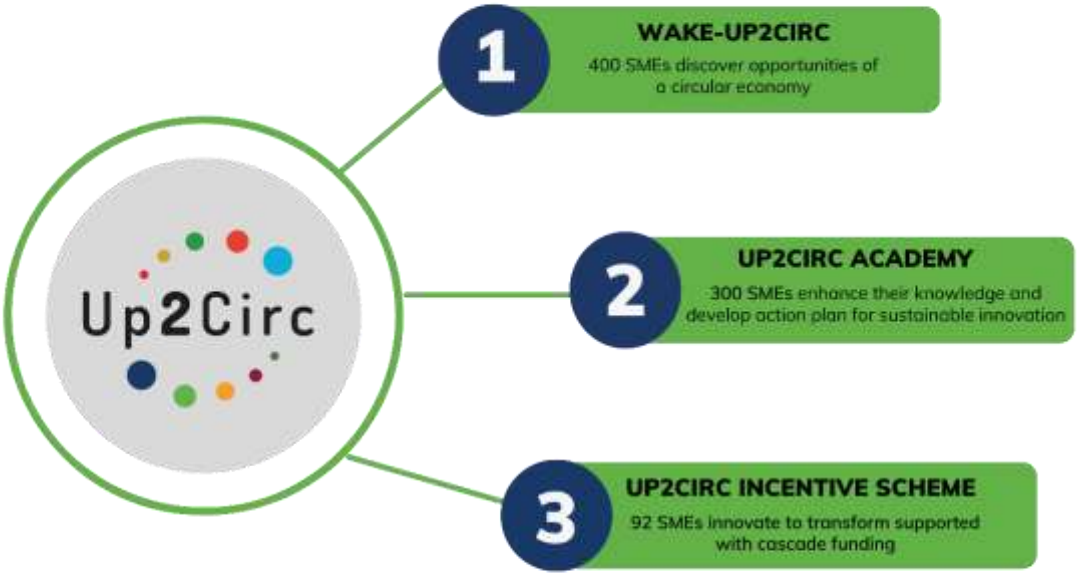
1 Introduction

This informative kit has been developed in order to equip SMEs, EU SME advisors, stakeholders from circular economy (CE) and policymakers with all essential knowledge about the Up2Circ project.

Up2Circ has the overall objective to accelerate and scale the transition of European SMEs towards a circular economy. The Up2Circ project will develop and implement attractive and efficient SME support measures that are highly accessible, straightforward and tailored to the company's specific needs, involve unbureaucratic funding opportunities that clearly reward sustainability aspects, provide easy and clear access to comprehensive practical knowledge and expert advice and point out how transition will benefit business on a relatively short-term horizon.

The project is being implemented by 7 partners from Italy, Estonia, Czech Republic, France, Poland, Germany and Spain in the period January 2023 – December 2026.

Main expected results:



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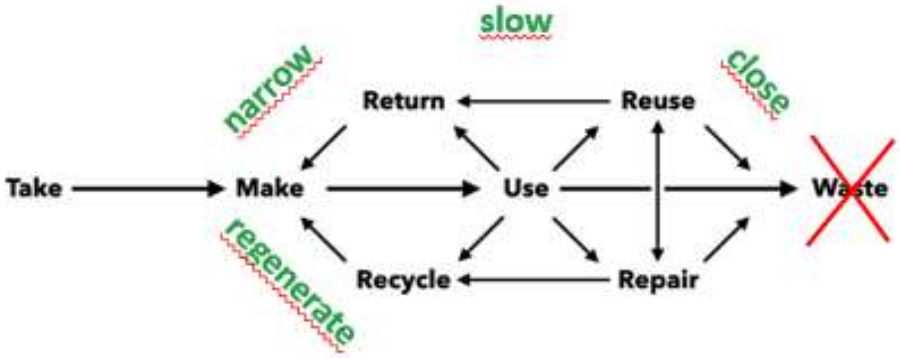
2 Introduction to circular economy

Linear Business Models take natural resources, make products for consumers that eventually become waste. The circular economy offers a profitable opportunity to move away from resource-intensive processes, maximising the use of existing assets and creating new revenue streams. To reach circularity, the flows of materials, energy, water and nutrients shall be narrowed (use less), slowed (use longer) and closed (use again). In other words: "**Reduce – Reuse – Recycle!**" Another circular strategy is to regenerate (make clean), which means avoiding contaminations and emissions, e.g. by using non-toxic and biodegradable materials and renewable energy.



Main principles of the circular economy:

Eliminate waste and pollution
There is no waste in nature, therefore we should consider the human-made concept of waste as a design flaw rather than as inevitable by-products of the things we make. Whereas the linear economy usually starts to think about disposal or recycling at end of life of a product, the circular economy aims to eliminate waste and pollution initially at design stage. A producer in the circular economy takes responsibility for the whole lifecycle of a product.

Circulate products and materials at their highest value
The key concept of circular economy to decouple growth from use of finite resources is to keep products and materials in use as long as possible and at the highest possible value. Products are designed to be reused, repaired, remanufactured and, if this is not possible, recycled. Or they are made out of biodegradable and compostable materials that can be returned to the biological cycle.

Regenerate natural systems
Linear economy has destroyed the balance of our natural ecosystems. To ensure supply of fresh air, potable water and fertile soils we need not only to reduce emissions and contamination, but also to promote biodiversity and natural loops, like returning nutrients to the earth.

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The **opportunities of the circular economy** can best be understood in contrast to the inefficiencies of the linear economy:

- **Inefficient use of materials**: Most input materials are recyclable and durable – but not all companies design products for recyclability or make use of recycled materials in production. And only very few companies have dedicated take-back schemes
- **Inefficient product lives**: Most products are built for long lifecycles and high durability – however, design for enhanced reparability, modularity and upgradeability is limited. The full potential of after-sales services is not exploited.
- **Underutilized product capacity**: Most products and infrastructure are far from being fully utilized..
- **Wasted end-of-life value**: Many products allow for remanufacture or high quality recycling, but with sales the producer loses access to end-of-life products and false disposal or lack of information about materials included inhibit high quality recycling.

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As an example, let us look at a swing that kids can play with in a garden - and at the business of the manufacturer of playground equipment, who built and sold it. What opportunities for circular product, process or business model innovation could you imagine?

Product innovation	Process innovation	Business model innovation
Use of materials: The swing is made of recyclable and durable materials but it is probably not designed for recyclability and no recycled materials have been used in production.		
Design the product for closed loop recycling	Apply processes for substitution of virgin raw materials by bio-based or recycled materials	Develop a circular supply chain
Product lifetime: This swing is built for long lifecycles and high durability, but kids grow quickly and interests change. Is it designed for enhanced reparability, modularity and upgradeability? The full potential of after-sales services is not exploited		
Use modular design that may be adjusted when kids grow	Apply LEAN manufacturing processes with standardized parts	Develop a portfolio for product life extension
Product capacity: Many kids could have fun with this swing, but most playground equipment, especially in private gardens, is rather rotting then being fully utilized		
		Swings as a service for a monthly fee
End-of-life value: Materials allow for remanufacture or high quality recycling, but with sales the materials are gone		
Design products to be remanufactured	Apply ICT processes enabling reverse logistics and refund system	Offer a take-back scheme

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The Circular Economy Practitioner Guide gives a good overview of circular practices that companies can implement within the different business segments:

- **Research, innovation or design** departments can consider how to design out waste, design based on sustainable resources, design enabling high quality recycling of materials, design for minimal resource use along life cycle, for upgrading and modularity, for reuse, repair, refurbishment and remanufacturing and for cleaner material cycles.

- **Procurement** departments can consider how to transition towards circular supply chains, e.g. buying products that are made with bio-based or recycled resources or using services instead of buying products.

- **Production and Manufacturing** departments can consider transition towards circular production processes such as additive or lean manufacturing, remanufacturing or resource efficient production.

- **Sales and Marketing** departments can consider circular business models such as sharing, product as a service or pay per use.

- **Waste Management** departments can consider valorization of output-streams and energy recovery as well as how end of life products can be managed best including reverse logistics, disassembly, secondary material marketplaces and recycling.

- **Finance and Accounting** departments can consider best strategies for financing, cash flows, price calculation or measurement of asset values in the context of circular business models.

Benefits for businesses

- ✓ Reduction of material and energy costs
- ✓ A more stable supply chain
- ✓ New business opportunities, e.g. with servitization
- ✓ Optimised customer relations
- ✓ Increased resilience
- ✓ Better financing conditions
- ✓ Being prepared for future legislative and reporting requirements

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3 Political framework of EU Circular transition

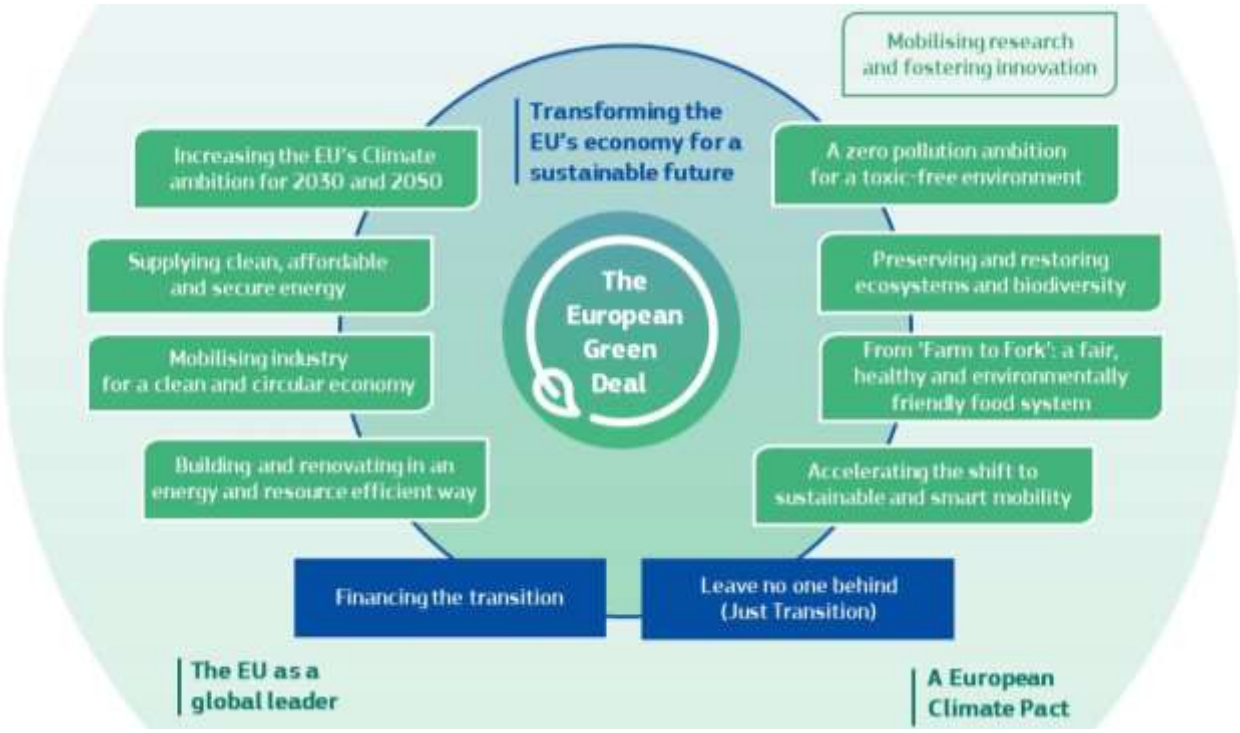
The EU Green Deal – a sustainable vision for Europe

Climate change, environmental pollution and the loss of biodiversity - these are some of the major current challenges that our society is increasingly confronted with. In order to be able to meet these in a targeted and efficient manner, the EU Commission presented the European "Green Deal" in December 2019. This concept paper shows concrete measures to initiate a social and economic change for a new growth strategy.

The overarching goal is to make the transition to modern, resource-efficient and competitive economy, ensuring:

- no net emissions of greenhouse gases by 2050, envisaging 55% reduction in greenhouse gas emissions by 2030 compared to 1990
- economic growth decoupled from resource use
- no person and no place left behind

The measures envisaged are focussing different thematic areas, bringing new challenges to the respective actors, but also new business opportunities and an improvement of the well-being and health of citizens and future generations.



For the economy, this requires decisive measures for modernisation and transformation towards climate neutrality and circular economy, making the need for action in the coming years very clear.

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A new industrial strategy for a competitive, green, digital Europe

With the new industrial strategy, published in March 2020, the EU sets out pathways how to transition EU industries, with the main goal to harness the significant potential in global markets for **low-emission technologies, sustainable products and services**.

Each of the 14 EU industrial ecosystems needs to transform its business models and value chains to form the basis for a green, digital and resilient European economy. So-called "transition pathways" (economic transformation pathways) are being designed to better understand the scope, costs and long-term benefits of the desired measures in the respective industry sector. For the companies, this results in better planning possibilities that enable forward-looking action and targeted preparation for transformation.

Overview of sector-specific transition pathways

The EU's New Circular Economy Action Plan

The EU's transition to a circular economy is one of the main building blocks of the EU Green Deal as it reduces pressure on natural resources, creates sustainable growth and jobs, is a prerequisite to achieve the EU's 2050 climate neutrality target and to halt biodiversity loss.

"The EU needs to accelerate the transition towards a regenerative growth model that gives back to the planet more than it takes, advance towards keeping its resource consumption within planetary boundaries, and therefore strive to reduce its consumption footprint and double its circular material use rate in the coming decade."

The New Circular Economy Action Plan announces initiatives along the entire life cycle of products. It targets **how products are designed**, promotes **circular economy processes**, encourages **sustainable consumption**, and aims to ensure that waste is prevented and the resources used are kept in the EU economy for as long as possible. It introduces legislative and non-legislative measures targeting areas where action at the EU level brings real added value. It includes details on:

A sustainable product policy legislative initiative

- improving product durability, reusability, upgradability and reparability, addressing the presence of hazardous chemicals in products, and increasing their energy and resource efficiency;
- increasing recycled content in products, while ensuring their performance and safety;
- enabling remanufacturing and high-quality recycling;
- reducing carbon and environmental footprints;
- restricting single-use and countering premature obsolescence;

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- introducing a ban on the destruction of unsold durable goods;
- incentivising product-as-a-service or other models where producers keep the ownership of the product or the responsibility for its performance throughout its lifecycle;
- mobilising the potential of digitalisation of product information, including solutions such as digital passports, tagging and watermarks;
- rewarding products based on their different sustainability performance, including by linking high performance levels to incentives.

Measures to increase circularity in production processes

- review of the Industrial Emissions Directive, including the integration of circular economy practices in upcoming Best Available Techniques reference documents;
- facilitating industrial symbiosis by developing an industry-led reporting and certification system, and enabling the implementation of industrial symbiosis;
- supporting the sustainable and circular bio-based sector through the implementation of the Bioeconomy Action Plan;
- promoting the use of digital technologies for tracking, tracing and mapping of resources;
- promoting the uptake of green technologies through a system of solid verification by registering the EU Environmental Technology Verification scheme as an EU certification mark.

Measures to empower consumers and public buyers

- a revision of EU consumer law to ensure that consumers receive trustworthy and relevant information on products at the point of sale, including on their lifespan and on the availability of repair services, spare parts and repair manuals.
- strengthening consumer protection against green washing and premature obsolescence, setting minimum requirements for sustainability labels/logos and for information tools
- establishing a new 'right to repair' and consider new horizontal material rights for consumers for instance as regards availability of spare parts, access to repair and upgrading services
- minimum mandatory green public procurement (GPP) criteria

Specific actions are foreseen targeting **key value chains** that require urgent, comprehensive and coordinated actions:

- **Electrical and electronic equipment**: Regulatory measures so that devices are designed for energy efficiency and durability, reparability, upgradability, maintenance, reuse and recycling. Right to repair. Regulatory measures on compatibility of chargers, including decoupling from purchase of devices. EU-wide take back scheme. Review of EU rules on restrictions of hazardous substances in electrical and electronic equipment.
- **Batteries and vehicles**: New regulatory framework including rules on recycled content, collection and recovery of valuable materials, phasing out of non-rechargeable batteries, transparency requirements.
- **Packaging**: Reduce, reuse, recycle, also reduce complexity of packaging materials.
- **Plastics**: Avoiding microplastics pollution, e.g. tyres, textiles, ship coatings. Introducing bio-based, biodegradable or compostable plastics.

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- **Textiles**: Ecodesign measures, access to re-use and repair services. Incentives and support to product-as-service models, circular materials and production processes. Boosting the separate collection of textile waste, sorting, re-use and recycling of textiles.
- **Construction and buildings**: A new comprehensive Strategy for a Sustainable Built Environment to ensure coherence across the relevant policy areas such as climate, energy and resource efficiency, management of construction and demolition waste, accessibility, digitalisation and skills.
- **Food, water and nutrients**: Targets on food waste reduction; substitution of single-use items in food services; encourage circular approaches on water reuse and efficiency in agriculture, gardening and industrial processes; review of directives on wastewater treatment and sewage sludge.

An **enhanced waste policy** shall lead to less waste and more value, including waste reduction targets, harmonisation of separate waste collection systems, substitution of hazardous substances, creating a well-functioning EU market for secondary raw materials and a thorough review of EU rules on waste shipments.

Decisive measures such as the **EU Taxonomy Regulation** and the **Corporate Sustainability Reporting Directive** are being implemented to steer financing towards more sustainable production and consumption patterns and to encourage the integration of sustainability criteria into business strategies.

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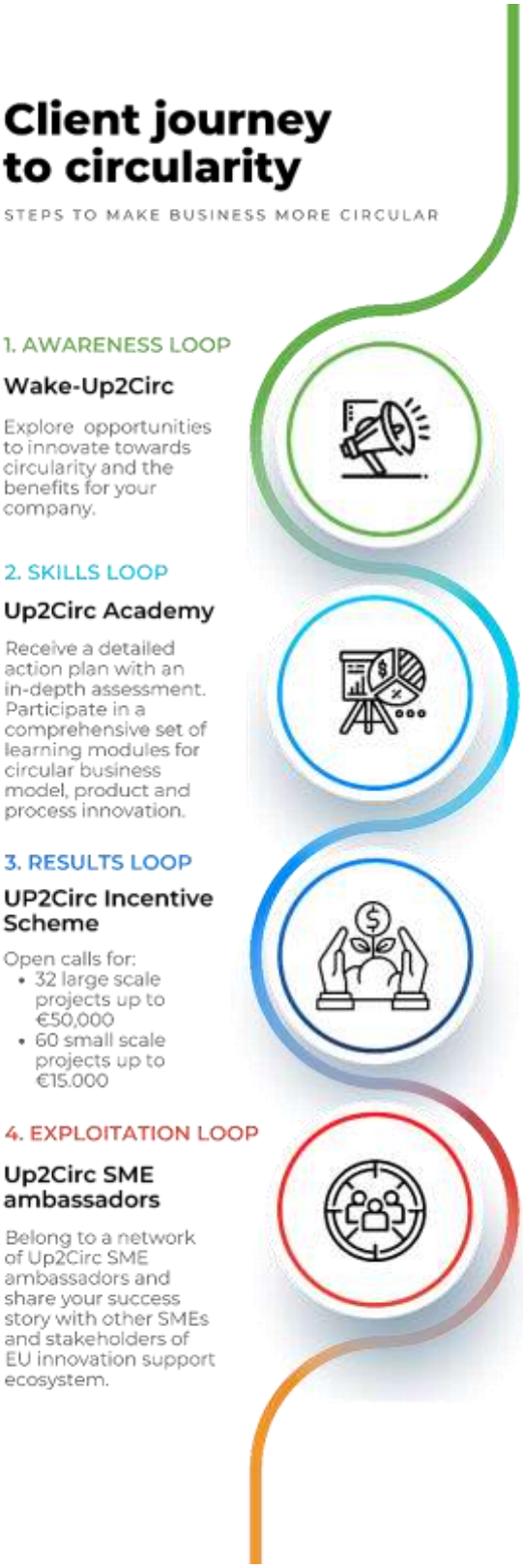
4 The "Up2Circ journey into circularity"



With Up2Circ as a small and medium sized enterprise (SMEs) you can

- discover opportunities of circular innovation
- develop a suitable action plan
- increase your knowledge on how to innovate to transform
- gain financial support for implementation projects
- share experiences

To apply for funding in Up2Circ Incentive Scheme, prior active involvement in Up2Circ Academy is required!

Pilot run starts June 2023
Call deadline: 11/2023

First open loop starts November 2023:
Call deadline: 5/2024

Second open loop starts May 2024:
Call deadline: 5/2025

Further information: https://up2circ.eu/

Are you are a small or medium sized enterprise according to the EU definition?

- ✓ < 250 staff headcount
- ✓ ≤ € 50 m turnover or
- ✓ ≤ € 43 m balance sheet total

To check if you are eligible as an SME please use the EU self assessment questionnaire

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5 Best practices

The Czech company **BRENS Europe** develops and manufactures products for the construction of railway tracks, level crossings and noise protection measures.

Challenge
The company has long perceived that it cannot keep drawing on non-renewable resources. Instead, it decided to start using waste for production.

Solution
BRENS works with recyclates from concrete or tyres. It recycles and reuses waste materials: scrap iron, concrete and rubber rubble. BRENS experts have also taken advantage of the excellent technical and utility properties of the material from the automotive industry. This is why one of the latest projects, a tram track noise absorber, is made from reprocessed offcuts from car seats, carpets, filters and shredded rubber from used tyres.

KODAS is a producer of high-quality natural fermented drinks and other products, located in Southern Estonia.

Challenge
The main waste in the production process of juice and juice drinks is the pressing residue of apples or other fruits. Until recently, the pressing residues were useless bio-waste for the company, which had to be composted and the associated costs had to be covered.

Solution
Kodas has developed a technology for refining the press residue for human consumption. For example, recipes for fiber-rich apple and berry purees have been developed. This makes the entire production process more environmentally friendly and economically efficient. Besides the significant increase in resource efficiency, the residue-based products have helped to enrich the product range of Kodas.

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FRANCE CONSTRUCTION/HEXDALLE designs and produces damping materials to cover all the risks in playgrounds, gyms, shooting ranges or industry since 1997.

Challenge
Main material France Construction uses is rubber. The company started reflecting on the impact of sustainability several years ago and decided to use recycled (and recyclable) rubber. In a next step the company intends to close the loop and move up the value chain by recovering, grinding and recycling rubber waste.

Solution
The company worked on a business plan to validate the technical and economic aspects to recover and recycle rubber waste in their own facilities. The objective is to avoid tyre disposal in landfill sites, strengthen own expertise on recovering and recycling of rubber waste as well as to secure the supply chain.

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siebold/hamburg provides all kinds of services in the field of design and construction of exhibition stands and shop fittings as well as the procurement and storage of related materials.

Challenge
Exhibitions only take place for few days, but for a successful trade fair appearance the booths should catch the eye and every customer has special wishes and requirements. Nevertheless Siebold wanted to offer a climate-neutral trade fair presence.

Solution
Siebold applies the most economical use of materials and a high level of reuse. Using the software UMBERTO for Carbon Footprint, alternative material and storage lists can be evaluated with their reusability and recycling proportions and CO2 emissions of each booth can be calculated. Partnering with ForestFinance Group customers can offset the remaining CO2 emissions.

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FAGUM STOMIL is a Polish manufacturer of safety footwear that has been operating since 1899. It produces footwear made from polymers for industrial and household applications.

Challenge
The company already used recycled materials but was still facing high production and energy costs and high environmental charges for disposal of production wastes.

Solution
Fagum Stomil introduced the world's first industrial recycling technology for used EVA footwear. Material from production waste, that was previously disposed of in a landfill or incineration plant, is recovered and customers are invited to return their end-of-life wellingtons. Thanks to the use of waste materials and to saving charges for disposal, the company could significantly reduce production costs.

REYNALDI SRL SB is an Italian company with more than 40 years of experience in formulating and producing natural cosmetics.

Challenge
The company wanted to develop innovative and functional cosmetic products made from natural and sustainable raw materials and reduce the environmental footprint of production.

Solution
Reynaldi invested in a filter system that recovers the water used in the production, purifies and re-introduces it in a closed cycle water usage. The plant paid off in 3 years, and now represents a minor cost. Reynaldi invested in a start up that produces innovative raw materials from food production waste. Introduction of circular raw materials has the potential to reduce CO2-footprint and makes the supply chain more resilient. A challenge were the regulatory barriers, as often by products derived from industrial sites are labelled as special waste which prohibits their usage.

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GRUPO NATAC S.L.U., headquartered in Spain, is dedicated to researching, developing, manufacturing and marketing natural ingredients to be used in food supplements, feed, pet food, as well as in functional foods and as natural, active pharmaceutical ingredients.

Challenge

To sustainably manufacture natural plant extracts and ingredients, Natac valorizes biomass from agro-industry. Main challenges encountered were the great variability in the state of raw materials, regulatory aspects and the need to bring together very heterogeneous actors from very different sectors.

Solution

Natac built strategic alliances with the most important local producers, who now follow Natac's criteria regarding the cultivation, harvesting, and processing of raw materials. This enhances the beneficial properties in the ingredients. Natac has been able to recycle 98% of the waste generated.

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