

LEADING CIRCULAR ECONOMY SOLUTIONS IN CATALONIA

ACCIÓ
Catalonia
Trade & Investment



Generalitat de Catalunya
Government of Catalonia

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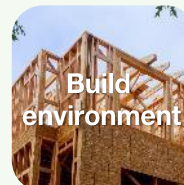
5 COMPANIES & RESEARCH CENTERS

EXPLORE CIRCULAR ECONOMY USE CASES

BY VERTICALS



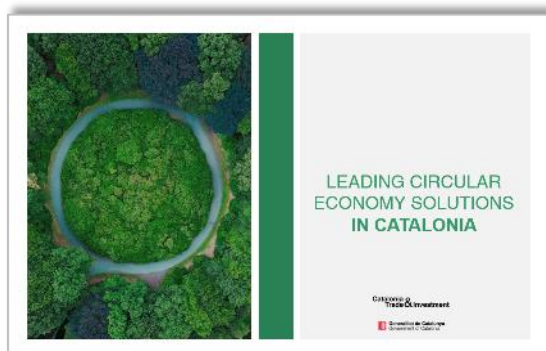
BY SECTORS



1. ABOUT

The present document is a Catalogue of Circular Economy use cases implemented by the Catalan ecosystem aimed to share and highlight innovative experiences, exchange knowledge and inspire cities and territories worldwide.

The Catalogue showcases different use cases, covering all the verticals and industrial sectors of the circular economy, highlighting in each case the challenge it tackles, the solution implemented as well as the companies that are making it possible.



In which vertical or industry sector you look for a circular economy solution?

Check the different topics in which the Catalan companies offer innovative circular economy solutions.

Want to know more about the companies behind each use case?

Per every use case there is a detailed file about the company that has implemented the solution as well as a link to the company's website and a channel to contact the company.

Definition of the Circular Economy

The Circular Economy is restorative and regenerative and aims for products, components and resources in general to keep their usefulness and value at all times. This concept distinguishes between technical and biological cycles.



The following three principles are the foundations of a new system:

DESIGN OUT WASTE AND POLLUTION

Did you know that waste and pollution are largely a result of the way we design things?

Waste and pollution are not accidents, but the consequences of decisions made at the design stage, where around 80% of environmental impacts are determined. By changing our mindset to view waste as a design flaw and harnessing new materials and technologies, we can ensure that waste and pollution are not created in the first place.

KEEP PRODUCTS AND MATERIALS IN USE

What if we could build an economy that uses things, rather than uses them up?

We can't keep wasting resources. Products and materials must be kept in the economy. We can design some products and components so they can be reused, repaired, and remanufactured. But making things last forever is not the only solution. When it comes to products like food or packaging, we should be able to get the materials back so they don't end up in landfill.

REGENERATE NATURAL SYSTEMS

What if we could not only protect, but actively improve the environment?

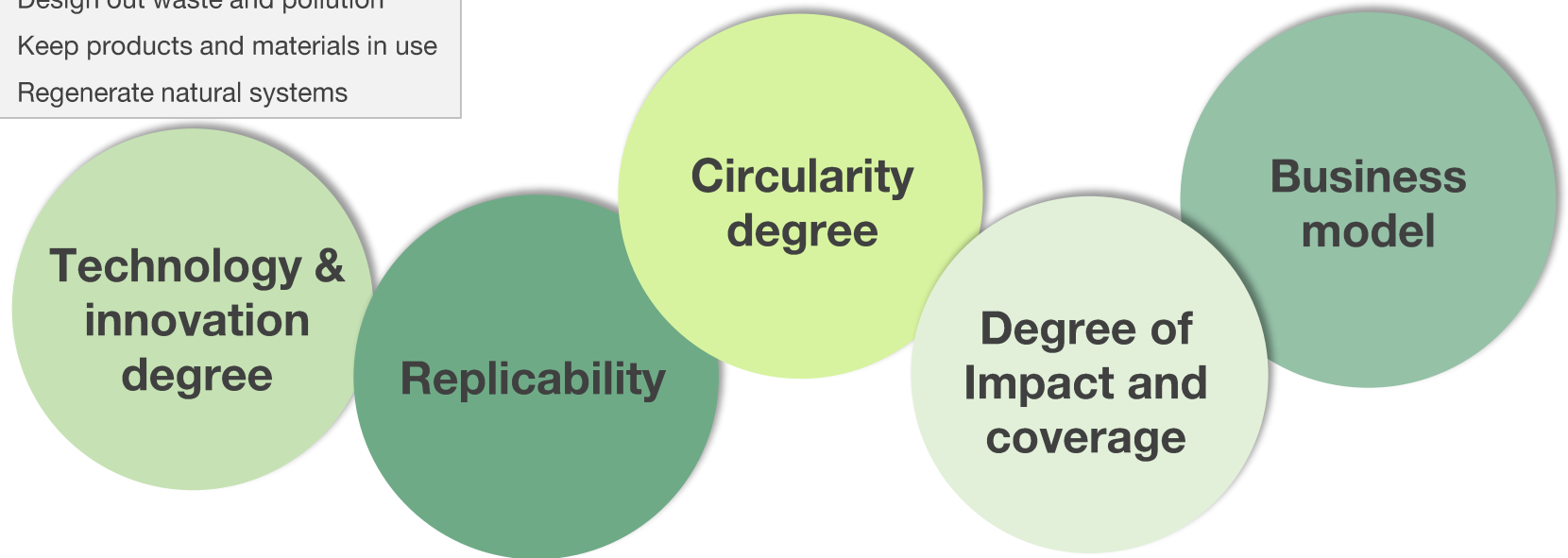
In nature, there is no concept of waste. Everything is food for something else - a leaf that falls from a tree feeds the forest. Instead of simply trying to do less harm, we should aim to do good. By returning valuable nutrients to the soil and other ecosystems, we can enhance our natural resources.

Source: Ellen MacArthur Foundation

Criteria

The Use cases included in this Catalogue have been selected according the following criteria. However, all are also committed to the three Circular economy values:

- Design out waste and pollution
- Keep products and materials in use
- Regenerate natural systems



The catalog is not exhaustive of all the solutions applied in the circular economy in Catalonia. The most innovative and / or illustrative of possible differential actions in the most relevant economic sectors for the Catalan economy have been highlighted

An aerial photograph of a roundabout with a central tree and surrounding greenery. The roundabout is a single-lane road with a central island containing a tree. The road is surrounded by green grass and trees. A car is visible on the road to the right of the roundabout.

2. CATALAN ECOSYSTEM

Mapping of the Circular Economy in Catalonia

In Catalonia there are **a number of initiatives and organizations related to the Circular Economy**: public authorities that drive projects and initiatives, organized clusters, universities, technology centres and other stakeholders, trade shows and International networks.



391
COMPANIES (2014)

- 91% of the companies identified are **SMEs** (under 250 employees) and **83% are companies incorporated before 2007** (companies over 10 years of age).
- 52.2% of the companies in the sector **export** and **12.2% have a subsidiary abroad**.
- 76% of companies are **concentrated in Barcelona**.
- Waste** includes **67.3% of companies**.



70,419
EMPLOYEES (2014)

- Waste** includes **76.4% of employees**, and of these, 82.5% are involved in the **waste management subsector**.

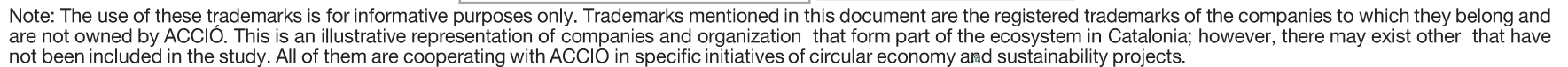


€4,090 M
of **TURNOVER**
(2015)

- The 391 companies identified **have an aggregate turnover of €11,038 M**, of which **€4,090 M is exclusively linked to the Circular Economy**.
- The €4,090 M accounts for **2% of the total Catalan GDP** (2014).
- 6 major operators** of waste concentrate **more than a third of the total estimated business volume** in Circular Economy.

IMPORTANT NOTE: The Circular Economy includes segments that make up part of the industries referred to in the Chemicals, Energy and Resources Promotion Programme (PIQER). Sectors such as chemicals (with an associated turnover of €14,000M) or companies that carry out activities related to energy or resources not linked to the Circular Economy are not included in this quantification and therefore the figures presented do not coincide with those of the PIQER.

Source: Cluster Development, having first identified the companies on the basis of information taken from interviews, a search by codes of reference and previous directories and databases provided by sector stakeholders and ACCIÓ, later recovering the information available in the SABI Online database



Hotspot Catalonia

The Circular Economy Hotspot is an event with the participation of experts, both from companies and governments from over the world in the field of Circular Economy, with the aim to know the strategies, business initiatives and successful partnerships of the main stakeholders responsible of leading the economy of Catalonia in order to make a more circular territory.

The event will offer meeting points for companies, governments and others showing Use cases about circular economy around the different sectors of the industry in the Catalan ecosystem. Actually, the Catalogue highlight some of the innovative circular solutions that will take a key role in the coming event.

The Circular Economy Hotspot Catalonia 2021 edition is built on a framework of 6 tracks, which together will provide a comprehensive view of the current state of circular economy solutions in both Catalonia and Europe: Circular design: Dematerializing the Economy, Closing the circle of materials, components, and products: re-making the economy, Bioeconomy: A Regenerative System, Industry 4.0: Enabling Technologies, Research and innovation: Connecting Actors and Inclusive circularity: Creating Social Value.

The guided tours will be structured around the following 9 economic sectors: Agrifood, Fashion & Textile, Energy, Mobility, Building, Packaging, Water cycle, Chemical, Public Initiatives.


For more information visit [this website](#).



3. CATALONIA TRADE & INVESTMENT

Catalan government's agency for business competitiveness

Catalonia
Trade & Investment

 Generalitat de Catalunya
Gobierno de Cataluña

The Catalan Government's agency for business competitiveness. Attached to the Ministry of Business and Knowledge, it specializes in promoting business innovation and internationalization and has a network of 40 offices worldwide.



**Best European
FDI Strategy**

*fDi Magazine Awards by
Financial Times*



INVESTMENT



TRADE



INNOVATION

Catalonia Trade & Investment's success lies in offering a pro-business approach and tailor-made solutions.

The institution offers services for international companies considering Catalonia and Barcelona as an investment location in Europe. It also offers services for expansion or for new projects for already established firms in Catalonia.

It's multidisciplinary teams work in the fields of investment and **international commerce**, and **technological innovation and cooperation**.

Source: EIC (DGI – ACCIÓ)

HOME

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4. SUSTAINABLE DEVELOPMENT GOALS

EXPLORE THE CIRCULAR ECONOMY USE CASES THAT IMPACT EACH OF THE UNITED NATIONS SUSTAINABLE DEVELOPMENT GOALS



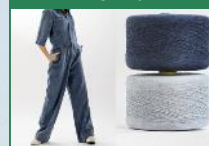
GOAL 1: NO POVERTY

The decline of global extreme poverty continues but has slowed. The deceleration indicates that the world is not on track to achieve the target of less than 3 per cent of the world living in extreme poverty by 2030. People who continue to live in extreme poverty face deep, entrenched deprivation often exacerbated by violent conflicts and vulnerability to disasters. Strong social protection systems and government spending on key services often help those left behind get back on their feet and escape poverty, but these services need to be brought to scale



- **POVERTY REDUCTION**
- **SOCIAL PROTECTION**
- **INCLUSION**
- **PEOPLE'S RESILIENCE**

Reuse your jeans!



Optimization of textile waste management



Reuse and recycling of clothing, accessories and footwear



GOAL 2: ZERO HUNGER

Hunger is on the rise again globally and undernutrition continues to affect millions of children. Public investment in agriculture globally is declining, small scale food producers and family farmers require much greater support and increased investment in infrastructure and technology for sustainable agriculture is urgently needed.



- **AGRICULTURAL PRODUCTIVITY**
- **NEW PRODUCTION SYSTEMS**
- **RESOURCES ACCESS**

Transforming imperfect products into opportunities



Processing plant for optimal production of Protein



Circular Agronomics



Nutri2Cycle



Edible Insects as Sustainable Food Alternative



In situ soil and aquifer remediation of TPH and metals



Advanced Decision Support System for Optimal Irrigation



Natural Preservation Technology



GOAL 3: GOOD HEALTH AND WELL-BEING

Major progress has been made in improving the health of millions of people, increasing life expectancy, reducing maternal and child mortality and fighting against leading communicable diseases. However, progress has stalled or is not happening fast enough in regards to addressing major diseases, such as malaria and tuberculosis, while at least half the global population does not have access to essential health services and many of those who do suffer undue financial hardship, potentially pushing them into extreme poverty

3 GOOD HEALTH AND WELL-BEING



- **HEALTH ACCESS AND COVERAGE**
- **INFORMATION AND EDUCATION**
- **SOCIAL INCLUSION**

Eco-efficient solution for nitrate/ammonia polluted water treatment



Transforming imperfect products into opportunities



Highly efficient catalysts for air filtration systems



Sustainable extraction of microalgae to develop skincare active ingredients



Development of advanced functional absorbent products



An ecological solar textile that purifies the air



Optimization of textile waste management



Reuse and recycling of clothing, accessories and footwear



Cleaning products in a tablet



Hygienic perfume based on biotechnological synthesis ingredients



From the almond skin to a cholesterol reduction



Solar HUB



GOAL 4: QUALITY EDUCATION

Despite the considerable progress on education access and participation over the past years, 262 million children and youth aged 6 to 17 were still out of school in 2017, and more than half of children and adolescents are not meeting minimum proficiency standards in reading and mathematics. Rapid technological changes present opportunities and challenges, but the learning environment, the capacities of teachers and the quality of education have not kept pace. Refocused efforts are needed to improve learning outcomes for the full life cycle.



- **EDUCATION ACCESS AND QUALITY**
- **GENDER EQUALITY**
- **EDUCATION DEVELOPMENT**
- **CULTURAL DIVERSITY**



GOAL 6: CLEAN WATER AND SANITATION

Despite progress, billions of people still lack safe water, sanitation and handwashing facilities. Data suggests that achieving universal access to even basic sanitation service by 2030 would require doubling the current annual rate of progress. More efficient use and management of water are critical to addressing the growing demand for water, threats to water security and the increasing frequency and severity of droughts and floods resulting from climate change. As of the time of writing, most countries are unlikely to reach full implementation of integrated water resources management by 2030.



- **WATER POLLUTION**
- **NEW WATER MANAGEMENT SYSTEMS**
- **WATER REUSE**
- **WATER QUALITY**



Filled of ditches with reused aggregate



Sant Feliu Reuse



Public- private collaboration for implementing circularity



Cost effective bacterial for industrial wastewater treatment



In situ soil and aquifer remediation of TPH and metals



Next generation water systems



Re-designing the value and supply chain of water and minerals

ZERO BRINE



Moving bed biofilm reactor-membrane bioreactor



SIM4NEXUS



New electro purification techniques for industrial effluents



Eco-efficient solution for nitrate/ammonia polluted water treatment



Hybrid technology coupling green walls and microbial fuel cells (MFC)

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Hybrid electro-oxidation and ozonation for wastewaters



Bioremediation of contaminated aquifers



Sustainable water filter to purify and analyze tap water



Compact and modular tertiary water reclamation system



New valorization alternatives for WWTP waste



Liquid waste treatment by Zero Liquid Discharge (ZLD) systems



Evaporation solar System for treatment of manure



Shift towards a circular economy for the housing sector



Continuous filament production of synthetic yarn



Cleaning products in a tablet



Innovating in Construction Market by Using Recyclable Materials



Edible, flavored and 100% biodegradable straw

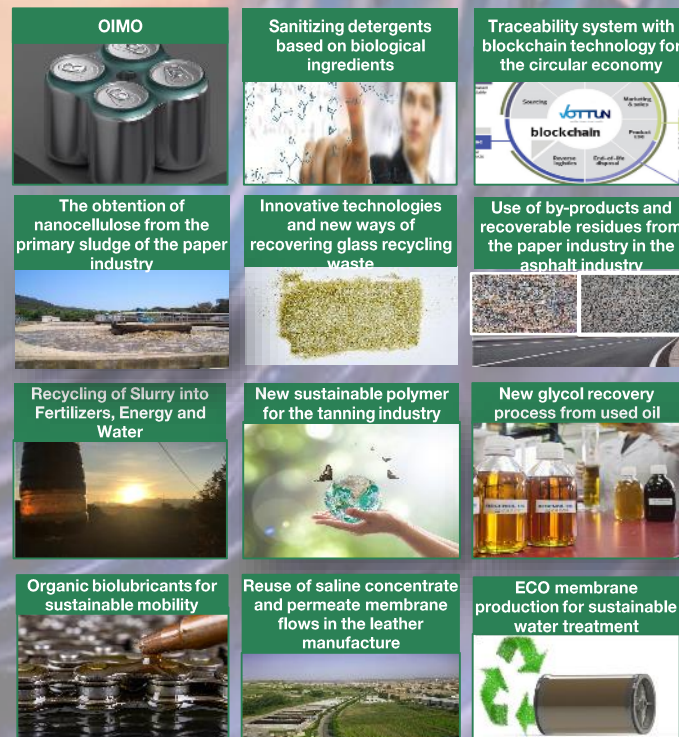


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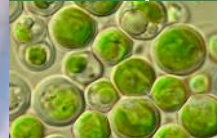


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- **WATER REUSE**
- **WATER QUALITY**

Advanced Decision Support System for Optimal Irrigation



Biotechnology for circular economy



Research of new processes to valorize gravel sands



Innovative technologies form seawater brines



Demonstration of Water loops Mediterranean



Support the implementation and managing of water reuse



Intelligent and sustainable managing water cycle in hotels



Customized Applications For Environmental Uses, Based In Artificial Intelligence



GOAL 7: AFFORDABLE AND CLEAN ENERGY

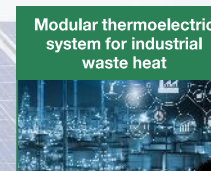
Access to electricity in the poorest countries has begun to accelerate, energy efficiency continues to improve and renewable energy is making gains in electricity sector. Despite this progress, some 800 million people remain without electricity while access to clean cooking fuels and technologies needs dedicated attention. In addition, if Sustainable Development Goals 7, 13 and related Goals are to be met, much higher levels of ambition are required with regard to renewable energy, including transportation and heating.



- **RENEWABLE ENERGY**
- **ENERGY EFFICIENCY**
- **NON-POLLUTING TECHNOLOGIES**
- **MOBILITY DEMAND**



SIM4NEXUS



Modular thermoelectric system for industrial waste heat



Turning sewage sludge into fuels and hydrogen



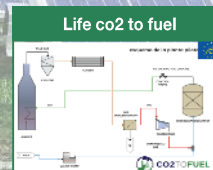
Sustainable Jet fuel from flexible waste biomass



Smart Plant Manager for Utility Scale Photovoltaic Plants



Green electricity from plants' photosynthesis



Life co2 to fuel



Hydrogen-powered vehicle



Fast charging high performing battery solutions



Solar HUB



Photovoltaic panels that work without sunlight



5G network platforms and research for circular economy applications

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- **ENERGY EFFICIENCY**
- **NON-POLLUTING TECHNOLOGIES**
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GOAL 8: DECENT WORK AND ECONOMIC GROWTH

Inclusive and sustainable economic growth can drive progress and generate the means to implement the Sustainable Development Goals. Globally, labour productivity has increased and unemployment is back to pre-financial crisis levels. However, the global economy is growing at a slower rate. More progress is needed to increase employment opportunities, particularly for young people, reduce informal employment and the gender pay gap and promote safe and secure working environments to create decent work for all.



- **SUSTAINABLE ECONOMIC GROWTH**
- **SAFE WORKPLACES**
- **QUALITY PROFESSIONS**
- **PROMOTE AID-FOR-TRADE**

Transforming imperfect products into opportunities



Obtaining high value products for metal companies



From the almond skin to a cholesterol reduction



Reuse and recycling of clothing, accessories and footwear



Sustainable retanning agents



Sustainable fatliquoring agents



Sustainable unhairing with enzymes



Sustainable tanning process



A bio-based recyclable packaging



Methodologies for the practical implementation of Circular Economics



Technology to reduce printers' impact on the environment



Circular Economics Training Course

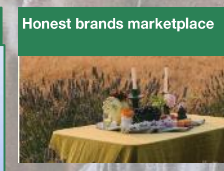


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GOAL 9: INDUSTRY, INNOVATION AND INFRASTRUCTURE

Aspects of the prevailing global economic environment have not been conducive to rapid progress on Sustainable Development Goal 9. While financing for economic infrastructure has increased in developing countries and impressive progress has been made in mobile connectivity, countries that are lagging behind, such as least developed countries, face serious challenges in doubling the manufacturing industry's share of GDP by 2030, and investment in scientific research and innovation remains below the global average.



- **EFFICIENT TRANSPORTATION SERVICES**
- **MANUFACTURING INDUSTRIES EMISSIONS**
- **RESEARCH IN INVESTMENT**
- **TELECOM ACCESS**

Filled of ditches with reused aggregate



Sant Feliu Reuse



In situ soil and aquifer remediation of TPH and metals



Re-designing the value and supply chain of water and minerals



Moving bed biofilm reactor-membrane bioreactor



New electro purification techniques for industrial effluents



Eco-efficient solution for nitrate/ammonia polluted water treatment



Ecoplanta: Green Chemical Industry



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Modular thermoelectric system for industrial waste heat



New valorization alternatives for WWTP waste



Manufacture of recycled products with the contribution of renewable energy



Circular Tuva towels



Surgical clothing reuse



Processing plant for optimal production of Protein



Solid State Fermentation



Transformation of EAF slag into high security asphalts



Recycled plastics from end of life vehicles waste



Recyclable waste selection



Optimization of textile waste management



PET waste recycling



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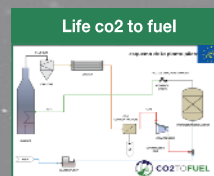
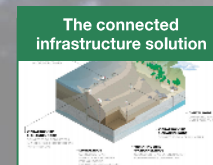
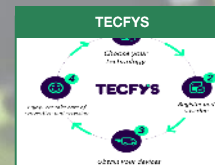


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Catalyst Development for Synthetic Natural Gas Production



Environmental Life Cycle Assessment of Li-Sulphur Batteries



Fast charging high performing battery solutions



Power battery pack



Solar HUB



Evaporation solar System for treatment of manure



Photovoltaic panels that work without sunlight



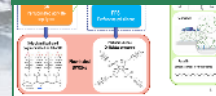
Shift towards a circular economy for the housing sector



Substitution of halogenated flame retardants



Substitution of fluorinated chemistries in water and oil repellent products



Continuous filament production of synthetic yarn



Recycling carbon fiber composites



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Sustainable extraction of microalgae to develop skincare active ingredients



Reuse of byproducts of the cork industry for cosmetics



Research and development of innovative greases



Hygienic perfume based on biotechnological synthesis ingredients



Technology to reduce printers' impact on the environment



Longer life for ballast in rail



Sustainable retanning agents



Sustainable fatliquoring agents



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Development of advanced functional absorbent products



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Bioplastics for the industry growth



Biomass recovery



Reduction of the concentration of N-ammonia from livestock manure



New material formulated with electric-arc furnace dust (EAFD)



New Materials formulated from residues for the construction sector



Longer life for transparent organic PV cells



Advanced photocatalytic textiles to mitigate air pollution in cities



Eco-friendly batteries for single-use applications



Sustainable plastic solutions



An environmentally friendly plastic solution



Manufacture of recycled high-quality yarns



Manufacture of recycled colored yarns



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Innovating in Construction Market by Using Recyclable Materials



Advanced Decision Support System for Optimal Irrigation



A bio-based recyclable packaging



The Greenest Tissue paper in the world



Compostable coffee capsules



OIMO



Edible, flavored and 100% biodegradable straw



Generation of activated carbon from waste products



A more circular plastic packaging value chain



Sanitizing detergents based on biological ingredients



Edible Insects as Sustainable Food Alternative



Sustainable Packaging



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Methodologies for the practical implementation of Circular Economics



All in one electric vehicle charger



TERRARI



Circular Economics Training Course



Circular Economy Chair



Professional Training in Circular Economy



New decarbonizing asphalt mixtures modified with recycled plastic polymers



Deodorization of rigid plastic packaging waste to promote its recycling and reuse



Innovative technologies and new ways of recovering glass recycling waste



Use of by-products and recoverable residues from the paper industry in the asphalt industry



Bio-repaving of roadways



Recycling of Slurry into Fertilizers, Energy and Water



GOAL 9: INDUSTRY, INNOVATION AND INFRASTRUCTURE

Aspects of the prevailing global economic environment have not been conducive to rapid progress on Sustainable Development Goal 9. While financing for economic infrastructure has increased in developing countries and impressive progress has been made in mobile connectivity, countries that are lagging behind, such as least developed countries, face serious challenges in doubling the manufacturing industry's share of GDP by 2030, and investment in scientific research and innovation remains below the global average.



- **EFFICIENT TRANSPORTATION SERVICES**
- **MANUFACTURING INDUSTRIES EMISSIONS**
- **RESEARCH IN INVESTMENT**
- **TELECOM ACCESS**

Methodologies for the practical implementation of Circular Economics



New sustainable polymer for the tanning industry



Recovery of organic matter from the mixed municipal solid waste



High-performance concrete from non-recyclable residues



New glycol recovery process from used oil



Organic biolubricants for sustainable mobility



Reusing leftover sand from the foundry industry for the cores production



Design of an innovative process to reuse glass contained in MSW



Reuse of saline concentrate and permeate membrane flows in the leather manufacture



Natural Preservation Technology



Development of Decision Support Systems in Forest Management



ECO membrane production for sustainable water treatment



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Converting organic waste into biomethane



Recycling Of Rice Waste For Automobile Industry



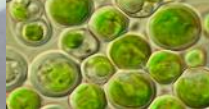
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100% compostable packaging for sweets



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Sustainable paper paste mannequins



GOAL 10: REDUCED INEQUALITIES

Inequality within and among nations continues to be a significant concern despite progress in and efforts at narrowing disparities of opportunity, income and power. Income inequality continues to rise in many parts of the world, even as the bottom 40 per cent of the population in many countries has experienced positive growth rates. Greater emphasis will need to be placed on reducing inequalities in income as well as those based on other factors. Additional efforts are needed to increase zero-tariff access for exports from least developed countries and developing countries, and assistance to least developed countries and small island developing States.

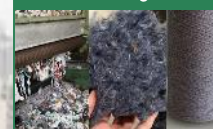


- **GUARANTEE EQUAL OPPORTUNITIES**
- **IMPROVE REGULATION AND OVERSIGHT OF GLOBAL FINANCIAL MARKETS AND INSTITUTIONS**

Transforming imperfect products into opportunities



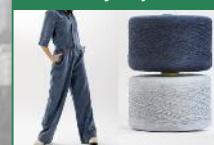
Optimization of textile waste management



Reuse and recycling of clothing, accessories and footwear



Reuse your jeans!



GOAL 11: SUSTAINABLE CITIES AND COMMUNITIES

Substantial progress has been made in reducing the proportion of the global urban population living in slums, though more than 1 billion people continue to live in such situations. Urgent action is needed to reverse the current situation, which sees the vast majority of urban residents breathing poor-quality air and having limited access to transport and open public spaces. With the areas occupied by cities growing faster than their populations, there are profound repercussions for sustainability.



- **PUBLIC TRANSPORT ACCESS**
- **URBAN GROWTH MANAGEMENT**
- **WASTE COLLECTION**
- **OPEN PUBLIC SPACES**
- **AIR POLLUTION**

Filled of ditches with reused aggregate



Sant Feliu Reuse



Public- private collaboration for implementing circularity



Next generation water systems



New electro purification techniques for industrial effluents



Surgical clothing reuse



Recyclable waste selection



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PET waste recycling



Go Zero Waste APP



Pay-as-you-throw (PAYT) schemes for waste generation



Technology for Waste Collection Optimization

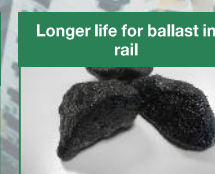
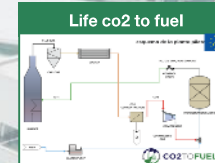
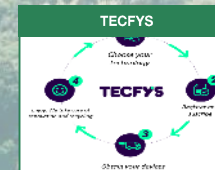


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Biomass recovery



Longer life for transparent organic PV cells



Advanced photocatalytic textiles to mitigate air pollution in cities



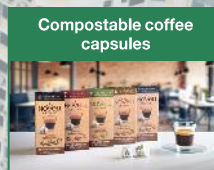
Eco-friendly batteries for single-use applications



Innovating in Construction Market by Using Recyclable Materials



The Greenest Tissue paper in the world



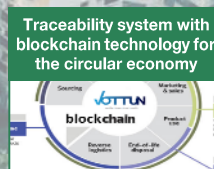
Compostable coffee capsules



Generation of activated carbon from waste products



A more circular plastic packaging value chain



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Methodologies for the practical implementation of Circular Economics



CoSin (Combustibles Sintètics)



New valorization alternatives for WWTP waste



Circular Economics Training Course



Circular Economy Chair



Professional Training in Circular Economy



Advanced Decision Support System for Optimal Irrigation



New decarburizing asphalt mixtures modified with recycled plastic polymers



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GOAL 12: RESPONSIBLE CONSUMPTION AND PRODUCTION

Worldwide material consumption has expanded rapidly, as has material footprint per capita, seriously jeopardizing the achievement of Sustainable Development Goal 12 and the Goals more broadly. Urgent action is needed to ensure that current material needs do not lead to the overextraction of resources or to the degradation of environmental resources, and should include policies that improve resource efficiency, reduce waste and mainstream sustainability practices across all sectors of the economy.



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- **MATERIAL FOOTPRINT**
- **SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS**

Public-private collaboration for implementing circularity



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Re-designing the value and supply chain of water and minerals



Moving bed biofilm reactor-membrane bioreactor



Hybrid technology coupling green walls and microbial fuel cells (MFC)



Hybrid electro-oxidation and ozonation for wastewaters



Bioremediation of contaminated aquifers



Sustainable water filter to purify and analyze tap water



Compact and modular tertiary water reclamation system



Manufacture of recycled products with the contribution of renewable energy



Circular Tuva towels



Surgical clothing reuse



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Processing plant for optimal production of Protein



Solid State Fermentation



Recycled plastics from end of life vehicles waste



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Liquid waste treatment by Zero Liquid Discharge (ZLD) systems



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Obtaining high value products for metal companies



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Circular Agronomics



Nutri2Cycle



Turning sewage sludge into fuels and hydrogen



Sustainable Jet fuel from flexible waste biomass



Pay-as-you-throw (PAYT) schemes for waste generation



Technology for Waste Collection Optimization



Glass Recovering Revolution



Materials recovery processes



TECFYS



Thermowaste, the complete solution to end landfills



A mobile app to reduce food waste from stores and establishments



From the almond skin to a cholesterol reduction



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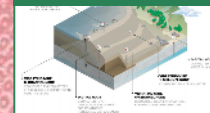
Reuse and recycling of clothing, accessories and footwear



Sun protection, for curtains and blinds



The connected infrastructure solution



Second Life of Electric Vehicle Batteries



Catalyst Development for Synthetic Natural Gas Production



Environmental Life Cycle Assessment of Li-Sulphur Batteries



Fast charging high performing battery solutions



Power battery pack



Evaporation solar System for treatment of manure



Shift towards a circular economy for the housing sector



Substitution of halogenated flame retardants



Substitution of fluorinated chemistries in water and oil repellent products

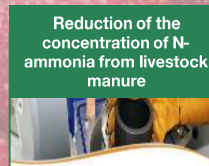


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- **SUSTAINABLE CONSUMPTION AND PRODUCTION PATTERNS**

Sustainable plastic solutions



An environmentally friendly plastic solution



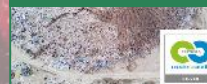
Manufacture of recycled high-quality yarns



Manufacture of recycled colored yarns



Innovating in Construction Market by Using Recyclable Materials



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A bio-based recyclable packaging



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Compostable coffee capsules



OIMO



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A more circular plastic packaging value chain



Traceability system with blockchain technology for the circular economy



Methodologies for the practical implementation of Circular Economics



Professional Training in Circular Economy



Sanitizing detergents based on biological ingredients



Ecoplanta: Green Chemical Industry



Edible Insects as Sustainable Food Alternative



Sustainable Packaging



Circular Economics Training Course



Circular Economy Chair



Advanced Decision Support System for Optimal Irrigation



TERRARI



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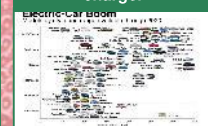
Electric motorcycle rental



5G network platforms and research for circular economy applications



All in one electric vehicle charger



New decarburing asphalt mixtures modified with recycled plastic polymers



Deodorization of rigid plastic packaging waste to promote its recycling and reuse



Innovative technologies and new ways of recovering glass recycling waste



Use of by-products and recoverable residues from the paper industry in the asphalt industry



Bio-repaving of roadways



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New sustainable polymer for the tanning industry



Recovery of organic matter from the mixed municipal solid waste



High-performance concrete from non-recyclable residues



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Design of an innovative process to reuse glass contained in MSW



Reuse of saline concentrate and permeate membrane flows in the leather manufacture



Natural Preservation Technology



ECO membrane production for sustainable water treatment



Converting organic waste into biomethane



Recycling Of Rice Waste For Automobile Industry



Redefining The Work Wear Industry Dynamic



Cyklos Circular Innovation



Platform for the reuse of household product containers



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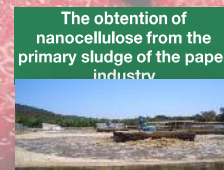
Biotechnology for circular economy



Research of new processes to valorize gravel sands



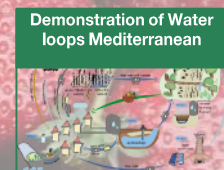
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The Sustainability Platform transforming the fashion industry



Sustainable paper paste mannequins



Honest brands marketplace

GOAL 13: CLIMATE ACTION

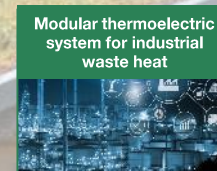
With rising greenhouse gas emissions, climate change is occurring at rates much faster than anticipated and its effects are clearly felt worldwide. While there are positive steps in terms of the climate finance flows and the development of nationally determined contributions, far more ambitious plans and accelerated action are needed on mitigation and adaptation. Access to finance and strengthened capacities need to be scaled up at a much faster rate, particularly for least developed countries and small island developing States.



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- **EDUCATION, AWARENESS RAISING AND HUMAN AND INSTITUTIONAL CAPACITY REGARDING CLIMATE CHANGE MITIGATION.**



SIM4NEXUS



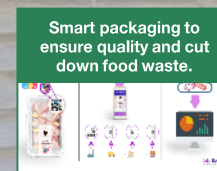
Modular thermoelectric system for industrial waste heat



Optimization of textile waste management



PET waste recycling



Smart packaging to ensure quality and cut down food waste.



Transforming imperfect products into opportunities



Circular Agronomics



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Automated glass recovery for waste treatment plants



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Solar HUB



Continuous filament production of synthetic yarn



Research and development of innovative greases



Hygienic perfume based on biotechnological synthesis ingredients



5G network platforms and research for circular economy applications



New material formulated with electric-arc furnace dust (EAFD)



New Materials formulated from residues for the construction sector



Advanced photocatalytic textiles to mitigate air pollution in cities



A bio-based recyclable packaging



OIMO



Ecoplantix Green Chemical Industry



Traceability system with blockchain technology for the circular economy



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Methodologies for the practical implementation of Circular Economics



Circular Economics Training Course



Circular Economy Chair



Professional Training in Circular Economy



Bio-repaving of roadways



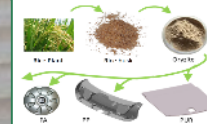
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Demonstration of Water loops Mediterranean



Customized Applications For Environmental Uses, Based In Artificial Intelligence



The Sustainability Platform transforming the fashion industry

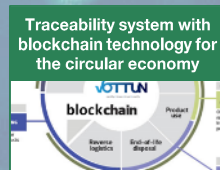


GOAL 14: LIFE BELOW WATER

The expansion of protected areas for marine biodiversity and existing policies and treaties that encourage responsible use of ocean resources are still insufficient to combat the adverse effects of overfishing, growing ocean acidification due to climate change and worsening coastal eutrophication. As billions of people depend on oceans for their livelihood and food source and on the transboundary nature of oceans, increased efforts and interventions are needed to conserve and sustainably use ocean resources at all levels.



- **REPOSIBLE OCEAN USE RESOURCES**
- **SUSTAINABLE FISHERIES DEVELOPMENT**
- **MARINE BIODIVERISTY PROTECTION**



GOAL 15: LIFE ON LAND

There are some encouraging global trends in protecting terrestrial ecosystems and biodiversity. Forest loss is slowing down, more key biodiversity areas are protected and more financial assistance is flowing towards biodiversity protection. Yet, the 2020 targets of Sustainable Development Goal 15 are unlikely to be met, land degradation continues, biodiversity loss is occurring at an alarming rate, and invasive species and the illicit poaching and trafficking of wildlife continue to thwart efforts to protect and restore vital ecosystems and species.



- **HEALTHY MOUNTAIN ECOSYSTEM**
- **BIODIVERSITY PROTECTION**
- **SPECIES EXTINCTION**
- **LAND USE PRODUCTIVITY**
- **NATURE RESILIENCE**

Longer life for ballast in rail



Continuous filament production of synthetic yarn



OIMO



Traceability system with blockchain technology for the circular economy



In situ soil and aquifer remediation of TPH and metals



Bioremediation of contaminated aquifers



Design of an innovative process to reuse glass contained in MSW



Development of Decision Support Systems in Forest Management



GOAL 16: PEACE, JUSTICE AND STRONG INSTITUTIONS

Advances in ending violence, promoting the rule of law, strengthening institutions and increasing access to justice are uneven and continue to deprive millions of their security, rights and opportunities and undermine the delivery of public services and broader economic development. Attacks on civil society are also holding back development progress. Renewed efforts are essential to move towards the achievement of Sustainable Development Goal 16.



- **CIBERSECURITY AND DATA PROTECTION**
- **TRANSPARENCY POLICIES**
- **CITIZENS PARTICIPATION**
- **DIGITAL ADMINISTRATION**



GOAL 17: PARTNERSHIPS FOR THE GOALS

Progress on some means of implementation targets is moving rapidly: personal remittances are at an all-time high, an increasing proportion of the global population has access to the Internet and the Technology Bank for the Least Developed Countries has been established. Yet, significant challenges remain: ODA is declining, private investment flows are not well aligned with sustainable development, there continues to be a significant digital divide and there are ongoing trade tensions. Enhanced international cooperation is needed to ensure that sufficient means of implementation exist to provide countries the opportunity to achieve the Sustainable Development Goals.



- **PUBLIC-PRIVATE PARTNESHIPS**
- **SHARE KNOWLEDGE WITH FOREIGN INSTITUTIONS**
- **SUSTAINABLE POLICIES DEVELOPMENT**

Next generation water systems



Re-designing the value and supply chain of water and minerals



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From the almond skin to a cholesterol reduction



Solid State Fermentation



Reduction of the concentration of N-ammonia from livestock manure



Transforming imperfect products into opportunities



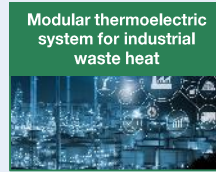
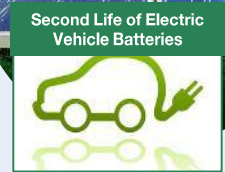
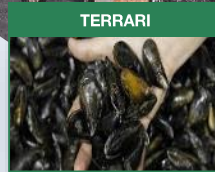
TERRARI



Development of Decision Support Systems in Forest Management



Chemical, Energy & Water industries



Chemical, Energy & Water industries

Sustainable Jet fuel from flexible waste biomass

Materials recovery processes

Thermowaste, the complete solution to end landfills

Evaporation solar System for treatment of manure

Photovoltaic panels that work without sunlight

Green electricity from plants' photosynthesis

Environmental Life Cycle Assessment of Li-Sulphur Batteries

Organic waste transformation into bioplastics using bacteria

Cleaning products in a tablet

Recycling carbon fiber composites

Longer life for ballast in rail

Hygienic perfume based on biotechnological synthesis ingredients

Sustainable retanning agents

Sustainable fattiquoring agents

Sustainable unhairing with enzymes

Sustainable tanning process

Reduction of the concentration of N-ammonia from livestock manure

New material formulated with electric-arc furnace dust (EAFD)

New Materials formulated from residues for the construction sector

Longer life for transparent organic PV cells

Eco-friendly batteries for single-use applications

Generation of activated carbon from waste products

Sanitizing detergents based on biological ingredients

Ecoplanta: Green Chemical Industry

Life co2 to fuel

An environmentally friendly plastic solution

Sustainable plastic solutions

Solar HUB

Chemical, Energy & Water industries



Deodorization of rigid plastic packaging waste to promote its recycling and reuse

Innovative technologies and new ways of recovering glass recycling waste

New sustainable polymer for the tanning industry

Recovery of organic matter from the mixed municipal solid waste

New glycol recovery process from used oil

ECO membrane production for sustainable water treatment

Advanced Decision Support System for Optimal Irrigation

Innovative technologies form seawater brines

Demonstration of Water loops Mediterranean

Support the implementation and managing of water reuse

Intelligent and sustainable managing water cycle in hotels

Health, well-being & Life Sciences Industries



Highly efficient catalysts for air filtration systems

Sustainable extraction of microalgae to develop skincare active ingredients

Reuse of byproducts of the cork industry for cosmetics

Development of advanced functional absorbent products

An ecological solar textile that purifies the air

Surgical clothing reuse

From the almond skin to a cholesterol reduction

Redefining The Work Wear Industry Dynamic

Biotechnology for circular economy

Sustainable mobility



All in one electric vehicle charger



Electric motorcycle rental



Hydrogen-powered vehicle



Carsharing electric between citizens, companies and administrations



Fast charging high performing battery solutions



Power battery pack



Recycled plastics from end of life vehicles waste



Turning sewage sludge into fuels and hydrogen



CoSin (Combustibles Sintetics)



Recycling Of Rice Waste For Automobile Industry



Models and techniques of data anonymization in the context of sustainable mobility



Sustainable Jet fuel from flexible waste biomass



Second Life of Electric Vehicle Batteries



Environmental Life Cycle Assessment of Li-Sulphur Batteries



Recycling carbon fiber composites



Research and development of innovative greases



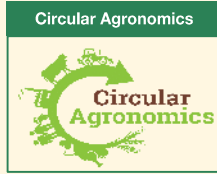
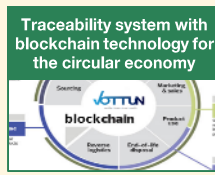
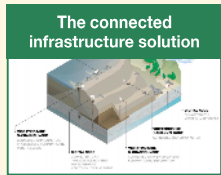
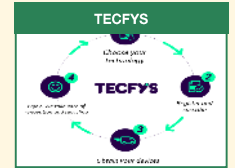
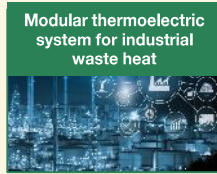
Organic biolubricants for sustainable mobility



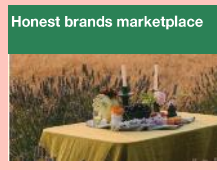
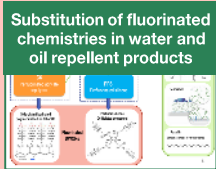
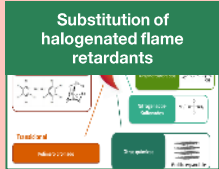
Converting organic waste into biomethane



Industry 4.0 & Industrials Systems



Design industries



Packaging



Smart packaging to ensure quality and cut down food waste.

Glass Recovering Revolution

Cleaning products in a tablet

Compostable coffee capsules

Technology to reduce printers' impact on the environment

A bio-based recyclable packaging

OIMO

Deodorization of rigid plastic packaging waste to promote its recycling and reuse

A more circular plastic packaging value chain

Sustainable Packaging

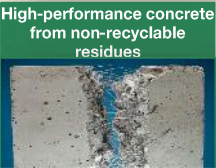
Continuous filament production of synthetic yarn

Platform for the reuse of household product containers

The obtention of nanocellulose from the primary sludge of the paper industry

100% compostable packaging for sweets

Build environment



Education



Methodologies for the practical implementation of Circular Economics



Circular Economics Training Course



Circular Economy Chair



Professional Training in Circular Economy



Methodologies for the practical implementation of Circular Economics

Circular Economy in the productive model

The Challenge

- ✓ Recovering PET waste in order to reintroduce it into a new production cycle as raw material.

Innovation/Solution

- ✓ Train professionals in the field of circular economy, a broad topic in which all socio-economic sectors are interrelated.
- ✓ Explore possibilities to apply the concept of circular economy in a practical way in different sectors of activity.
- ✓ Show methodologies for applying the circular economy to both industrial and consulting businesses.
- ✓ Give the tools to show the competitive and economic advantages of applying circular economy measures.
- ✓ Show real experiences that bring us closer to the circularity of the economy. Plastic waste reduction, avoiding ecosystem damages



Partner



Barcelona, Online Course

KPIs

To explore the possibilities to apply the concept in different sectors of activity, such as:

- ✓ Industrial symbiosis and life cycle analysis.
- ✓ Eco-labeling and Eco-design.
- ✓ Sustainable logistics, digitalization, and new business models.
- ✓ Waste prevention, recycling and upcycling.
- ✓ Economic incentives and financing.
- ✓ Perspectives of this change in the paradigm of the current production model.

SDGs impact



[+ INFO](#)

Circular Economics Training Course

How to transform waste into resources

The Challenge

- ✓ Industrial companies and society in general need to change the way they work to go from a linear to a circular economy, following the guidelines set by the European Union.

Innovation/Solution

✓ A postgraduate degree was created to teach engineers and technicians the latest updates, regulations and technologies to make possible the circularity. Sustainability, energy, innovation in new materials and waste are the bases of the program. The methodology is based on real exercises and the participants can also visit industries with best practices in circular economy.

Benefits

- ✓ The participants of the program can apply immediately their new knowledge in their companies, and they can accelerate the transformation to a new economy.

[+ INFO](#)



Partner



Barcelona

KPIs

Different studies areas:

- ✓ Industry
- ✓ Energy
- ✓ New materials
- ✓ Construction
- ✓ **168 h**
- ✓ **43 specialized teachers**
- ✓ **6 technical visits**

SDGs impact



Circular Economy Chair

Tecnocampus Mataró Chair

The Challenge

- ✓ To provide technical support to the local bodies in their way towards the circular economy
- ✓ To train and empower change makers that will lead the transition to a circular economy.
- ✓ To become a shared space for academy, industry, public sector and society to set and share goals for action.
- ✓ To generate new knowledge, methodologies and technologies to enable the needed change

Innovation/Solution

Research and Training activities considering the Circular Economy challenge, in the main areas of:

- Business, economy and social science
- Engineering and technology

In company courses to incorporate circular economy strategies and tools.

Transfer services to define specific solutions to companies and public bodies.

Integration of a university campus and a business and technology park to enable business activities.

[+ INFO](#)



Partner



Càtedra
d'Economia Circular
i Sostenibilitat



Tecnocampus

Centre d'Innovació, Recerca i Transferència

Universitat
Pompeu Fabra
Barcelona

Mataró

KPIs

- ✓ TCM graduated students are trained on sustainability and embedded in the new paradigm
- ✓ TCM is intended to foster the move towards a local more sustainable model
- ✓ As a living lab, will provide scalable lessons to other bigger and complex territories

SDGs impact



Professional Training in Circular Economy

Postgraduate in Circular Economy: Tools, Strategies & industrial Innovation

The Challenge

- ✓ To train and empower managers and other change makers, with the ability to incorporate strategic, technological and managerial visions in the new paradigm of Circular Economy.

Innovation/Solution

The postgraduate degree in Circular Economy aims to train professionals to give concrete and measurable answers and circular solutions to companies and institutions, considering the sustainable development as an opportunity. It gives a general and strategic overview, as well as implementation tools and best practices and networking channels with most relevant circularity practitioners.

It is a 19 ECTS program.

Benefits

- ✓ Empower the new role of *Chief of Sustainability Officer* as an strategic advisor for competitiveness trough Circular Economy

[+ INFO](#)



Partner



UNIVERSITAT POLITÈCNICA DE CATALUNYA
BARCELONATECH

School of Professional & Executive Development

Barcelona

KPIs

- ✓ Provides knowledge, tools and strategies to professionals who need to lead innovation processes in companies under the new context of Circular Economy.
- ✓ Provides the guidelines to turn current challenges (scarcity of resources, emerging regulations, etc.) into new opportunities (cost reduction, business positioning, innovation in business models, competitiveness and resilience, etc.).

SDGs impact



EXPLORE CIRCULAR ECONOMY USE CASES

CIRCULAR ECONOMY VERTICALS



1. WATER

Water is essential to life and considering the current trends in population growth and urbanization, it is critical to develop ways to use it more efficiently to reduce consumption as well as mechanisms to reuse and recycle such an important resource.

A holistic approach to the water cycle management together with real time information and intelligent automation provided by ICTs and the Internet of Things can enable a better use of water, reducing losses and consumption as well as ensuring the quality of the water. Although we are making steps forward in treating water and safely returning it to the system, the creation of a truly circular economy will eventually require even more radical solutions

Filled of ditches with reused aggregate



Sant Feliu Reuse



Public- private collaboration for implementing circularity



Cost-effective industrial wastewater treatment



In situ soil and aquifer remediation of TPH and metals



Next generation water systems



Re-designing the value and supply chain of water and minerals



Moving bed biofilm reactor-membrane bioreactor



SIM4NEXUS



New electro purification techniques for industrial effluents



Eco-efficient solution for nitrate/ammonia polluted water treatment



Hybrid technology coupling green walls and microbial fuel cells (MFC)



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Hybrid electro-oxidation and ozonation for wastewaters



Bioremediation of contaminated aquifers



Sustainable water filter to purify and analyze tap water



Compact and modular tertiary water reclamation system



Advanced Decision Support System for Optimal Irrigation



Innovative technologies form seawater brines



Demonstration of Water loops Mediterranean



Support the implementation and managing of water reuse



Intelligent and sustainable managing water cycle in hotels



Customized Applications For Environmental Uses, Based In Artificial Intelligence



Filled of ditches with reused aggregate

Circular economy: encourages reuse criteria

The Challenge

- ✓ Reuse with earth extracted from the works for the filling of the ditches, avoiding the environmental impacts in the landfills and in the quarries.

Innovation/Solution

Obtain the Environmental Quality Assurance badge from the Department of Territory and Sustainability that recognizes products and services that meet environmental requirements beyond the regulations, from a rejection from street works.

Benefits

- ✓ Decreased environmental impact
- ✓ Saving energy resources
- ✓ Reduction of the carbon footprint



Partner



City Case: Barcelona

KPIs

- ✓ **84.17% of the soil** used at Aigües de Barcelona street works has been reused
- ✓ **Minimization** of landfill disposal.

SDGs impact



[+ INFO](#)

Sant Feliu Reuse

Boosting new reclaimed water uses in the city of Sant Feliu de Llobregat

The Challenge

- ✓ Benchmarking of two alternative reclamation technologies to the existing treatment train, in order to promote new water uses for municipal and industrial applications in the area.

Innovation/Solution

Based on a theoretical evaluation of circular economy opportunities in the area of Sant Feliu, high potential in water reuse was identified for municipal and industrial water demands. The existing reclamation train is composed by a gravity media filter followed by UV lamps, nevertheless it presents limitations in terms of turbidity and suspended solids removal, both key parameters. During one year, a pilot plant was operated and monitored in the WWTP to demonstrate the benefits of two alternative technologies: ultrafiltration and pressure media filter, and assess them from a technical and economic point of view.

Benefits

- ✓ To meet water quality regulations.
- ✓ Cost-efficient treatment. Does not generate any waste or intermediate products.

[+ INFO](#)



Partner



City Case:

Sant Feliu de Llobregat (Barcelona)

KPIs

- ✓ Removal of **>95%** of suspended solids and turbidity, and **total removal** of microbiological load.
- ✓ **Inclusion of new water uses:** toilet flushing, private gardens irrigation and industrial reuse
- ✓ Pressure media filter presents **45-50% lower CAPEX** and **50% lower OPEX** than ultrafiltration.

SDGs impact



Public- private collaboration for implementing circularity

Circular economy territorial model fostering water reuse for non-potable uses

The Challenge

- ✓ Achieving sustainable water management through the implementation of a circular resource model in the context of climatic emergency.

Innovation/Solution

Development of a co-designed Circular Economy Territorial model for Gavà between the City Council, the Water Utility and the Water Technology Centre.

The innovative methodology is based on the analysis of water, energy and materials input and output flows of different territorial actors: the City Council, the utilities, 15 different industries, natural and agricultural areas and other administrations with competences at regional level. It uses active participation and consultation as a crucial point to achieve the required engagement.

Benefits

- ✓ 10 circular economy opportunities for closing the resource loops and achieving resource efficiency.
- ✓ Opportunities for water reuse from the local Wastewater Treatment Plant as an alternative source of water supply.

[+ INFO](#)



Partner



Aigües de
Barcelona



Ajuntament
de Gavà

CETAQUA
WATER TECHNOLOGY CENTER

City Case: Gavà

KPIs

- ✓ Potential for reusing a minimum of **3.287.167 m³ a year** of treated waste water for urban, industrial and agricultural uses.
- ✓ Potential for **substituting 50% of potable water** used in the urban context.
- ✓ Measurement of the value driven innovations through a **specific set of indicators for assessing the transition to a circular model** in Gavà.

SDGs impact



Cost effective bacterial for industrial wastewater treatment

Radically innovative bacterial treatment for recalcitrant industrial wastewater

The Challenge

- ✓ Develop a cost-effective wastewater treatment that can decompose the hazardous products present in heavily contaminated industrial waters.

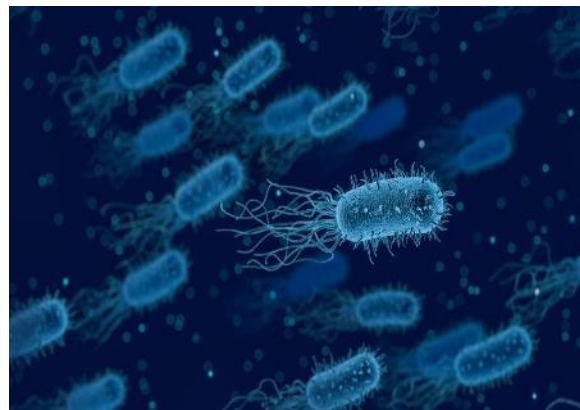
Innovation/Solution

(Project RIBATI GA 945638) biotechnological system that eliminates the pollutants contained in industrial wastewater at a cost significantly lower than the methods currently used. The innovative solution allows the activation, dosing and intelligent monitoring of the entire industrial process. At the end of the process we obtain up to 90% clean water that can be reused in the production process or discharged directly into the public water network without the need for additional treatments. The treatment is compatible with others and it can be incorporated in any phase of the current treatment system.

Benefits

- ✓ Reduce the expenses dedicated to the treatment of industrial wastewater from production processes

[± INFO](#)



Partner



Amapex
smart enviro treatments

KPIs

- ✓ The treatment can provide **savings of up to 59%** in treatment and/or consumption expenses.
- ✓ **Highly compatible**, it can be incorporated in any phase of **the current treatment system**.

SDGs impact



In situ soil and aquifer remediation of TPH and metals

A combination of techniques that optimizes time, energy and water consumption

The Challenge

- ✓ The on-site remediation of soils contaminated by hydrocarbons and metals and thus reduce waste and optimize the use of water.

Innovation/Solution

The Ribas project develops a technology for in situ treatment of soils contaminated with TPH and metals. It aims at treating groundwater and reduces energy and attempts to recycle all water involved. The project is now in a prototyping phase and aims to be implemented in heavily polluted sites, with particular emphasis in areas where soil excavation needs to be minimized.

Benefits

- ✓ Reduces chemical discharges in the environment
- ✓ Minimizes air emissions of volatile compounds
- ✓ Optimizes energy consumption
- ✓ Reduces overall project budget



Partner



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KPIs

- ✓ Treats **TPH and metals** combined.
- ✓ **Minimizes** site surveillance
- ✓ Applicable to **multiple contaminants sources**

SDGs impact



Next generation water systems

Challenging embedded thinking in the water sector

The Challenge

- ✓ Include water in important circular economic cycles, R&D and innovation projects.

Innovation/Solution

NextGen project aims at accelerating, transfer and upscale circular economy practices worldwide by sharing our collective experiences and insights in citizen and stakeholder engagement, business models and services. A marketplace and targeted development of spin off activities will commercialize effective solutions. The project comprises a strong partnership of water companies, industry, specialized SMEs, applied research institutes, technology platforms, city and regional authorities. For each of them, NextGen builds on an impressive portfolio of research and innovation projects.

Benefits

- ✓ Optimize water resources
- ✓ Manages and recovers energy more efficiently.

+ [INFO](#)



Partner

eurecat
Centre Tecnològic de Catalunya

**Agència Catalana
de l'Aigua**

KPIs

- ✓ **40%** decrease in membrane cost.
- ✓ **30%** increase in permeability
- ✓ **Increase** in available resources (water, nutrients, energy)
- ✓ **Decrease** in wastewater treatment cost

SDGs impact



Re-designing the value and supply chain of water and minerals

Wastewater Recovery Economy

The Challenge

- ✓ Recover high quality and sufficient purity end products with good market value

Innovation/Solution

This project aims to facilitate the implementation of the Circular Economy package and the SPIRE Roadmap in various process industries by developing the necessary concepts, technological solutions and business models to re-design the value and supply chains of minerals (including magnesium) and water, while dealing with present organic compounds in a way that allows their subsequent recovery. To achieve this, technologies such as nanofiltration using regenerated membranes, eutectic freeze crystallization, forward feed evaporation and electro dialysis with bipolar membranes are being evaluated.

Benefits

- ✓ Minimizes the environmental impact of industrial operations through brines (ZERO BRINE).
- ✓ Higher resource availability.
- ✓ New Business models.

[+ INFO](#)



Partner

eurecat
Centre Tecnològic de Catalunya

KPIs

- ✓ Includes **22 partners** from **research institutes**, construction companies, and **end-users** from **10 countries**.
- ✓ **50%** decrease in water consumption
- ✓ **80%** decrease in salt discharge

SDGs impact



Moving bed biofilm reactor–membrane bioreactor

MBR-MBBR Hybrid System for Water Regeneration

The Challenge

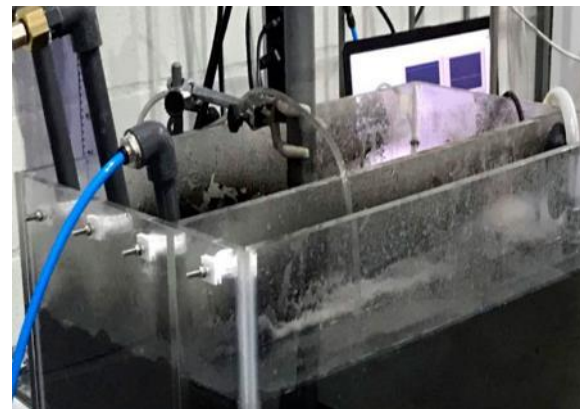
- ✓ More efficient water regeneration.

Innovation/Solution

The system combines the advantages of attached biomass reactors and membrane separation processes, including decrease of suspended solids due to the attached biomass growth, potentially decreasing membrane fouling in the MBR. Moreover, the growth of the biomass in biofilm instead of suspended flocs enables the decrease of the reactor volume creating a very compact technology. In general, fixed-film processes are less sensitive to environmental variations and, thus, to toxic compounds. The long sludge age in biofilms permits the growth of slow-growing bacteria and the removal of recalcitrant compounds such as micro-pollutants or coloured molecules.

Benefits

- ✓ Improve sustainability
- ✓ Reduce water fouling and optimize operating costs



Partner



KPIs

- ✓ **80%** increase in recalcitrant contaminants removal.
- ✓ Less fouling tendency
- ✓ **Less cost** for wastewater treatment

SDGs impact



[+ INFO](#)

SIM4NEXUS

Towards a sustainable management of the Nexus, with a digital perspective

The Challenge

- ✓ New scientific evidence on cross domain sustainable, integrated and circular governance of resources at different spatial scales (regional, national, European, Global).

Innovation/Solution

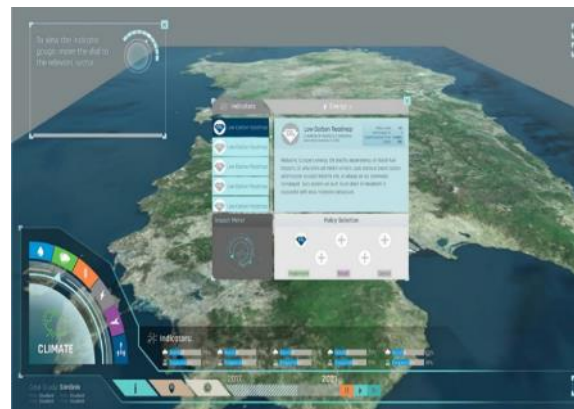
Shift from silos to systemic approach, to help understand complex and dynamic interrelationships between sectors.

Anticipation towards potential trade-offs and synergies supporting viable options across different sectors by promoting circularity paths among them.

Systematic process to understand circular interlinkages between resources (i.e. water, energy, food and land) under climate change.

Benefits

- ✓ Test the potential benefits of existing policies and near-term policy initiatives and how they relate to sustainability goals.



Partner

eurecat
Centre Tecnològic de Catalunya

KPIs

- ✓ Deployed as a **Serious Game tool** for testing and evaluating policy decisions. It integrates complexity science, **7 thematic models and AI engines**. It is operable in 12 case studies across Europe.

SDGs impact



[+ INFO](#)

New electro purification techniques for industrial effluents

Efficiency for paper, chemical and tanning industries

The Challenge

- ✓ Innovative technologies based on electro purification techniques to reduce the costs associated with the management and treatment of residual effluents from the paper, chemical and tanning industries.

Innovation/Solution

The electro-purification techniques includes process that employ the electricity for the separation of ions and/or for the generation of chemical reagents able to purify wastewaters: electro-oxidation in situ (EOS), oxidation of electro-generated compounds (OEG), electro-coagulation (EC) and electro-dialysis (ED).

Benefits

- ✓ Reduce energy consumption of electro-purification systems
- ✓ Decrease water consumption in the paper, chemical and tanning industry



Partner



KPIs

- ✓ Improving the quality of the treated effluents: **Up to 50% of organic matter removal. Colour removal up to 100%.**
- ✓ Depending on the productive process, reuse of the treated effluent.
- ✓ Development of a more efficient power supply: **10% reduction in energy consumption.**
- ✓ Reduction of the carbon footprint by **50%** in comparison to the technologies currently used.

SDGs impact



+ [INFO](#)

Eco-efficient solution for nitrate/ammonia polluted water treatment

Up-scaling, demonstrations and market applications

The Challenge

- ✓ Provide access to clean water for everybody at an adequate cost.
- ✓ Wastewater depuration without waste stream.

Innovation/Solution

Hydrokemos demonstrated in 2018 and commercialized the first fully clean equipment to purify nitrate/ammonia polluted water.

In the EU +20% of groundwater is contaminated by nitrates due to the use of fertilizers that have been and still are extensively applied in agriculture. On the other hand, demand for freshwater is increasing by 64 billion cubic meters every year. Groundwater is essential for meeting this increasing demand and existing solutions to purify it are highly inefficient and/or produce dangerous residues.

Benefits

- ✓ No waste production, Zero Drop technology.
- ✓ 99 % energetical cost.
- ✓ Fully automated plants

+ [INFO](#)



Partner



KPIs

- ✓ Simple **electrochemical patented process.**
- ✓ **100% conversion** from nitrate/ammonia to nitrogen gas.
- ✓ **Over 10 years of investigation** to develop this technology

SDGs impact



Hybrid technology coupling green walls and microbial fuel cells (MFC)

Mild wastewater treatment and energy producing technology

The Challenge

- ✓ Natural wastewater treatment and renewable energy supply.

Innovation/Solution

The electro green wall technology focuses on putting together plants and electroactive microorganisms to treat wastewater and to harvest renewable energy. Wastewater treatment and energy recovery are the dual outcomes of this coupled technology.

Organic matter removal is similar or higher to a conventional green wall, and can decrease the surface treatment area, reduce greenhouse gases emission, avoid clogging. In terms of energy output, the obtained electricity allows feeding water quality sensors for process monitoring

Benefits

- ✓ The use of greywater allows reducing tap water for irrigating the green wall, and reclaimed water can be obtained.



Partner



KPIs

- ✓ The integration of MFC allows a **50% increase on organic matter removal**
- ✓ Power supplied by MFC can achieve up to **3,2 W·m⁻²**
- ✓ Hydraulic retention time can be reduced up to **3 days**

SDGs impact



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Hybrid electro-oxidation and ozonation for wastewaters

Removal of emerging compounds in hospital wastewater

The Challenge

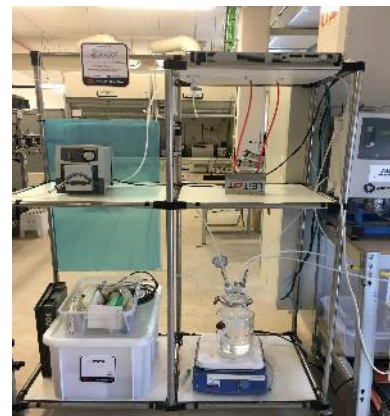
- ✓ Presence of recalcitrant contaminants of emerging concern in wastewaters, such as pharmaceuticals in hospital wastewater.

Innovation/Solution

Electro-oxidation is based on the electro-generation of non-chlorinated oxidant species, which can disinfect the water while also removing recalcitrant compounds. Its combination with ozonation allows increasing the treatment efficiency while reducing the appearance of chlorinated byproducts.

Benefits

- ✓ The combination of electro-oxidation and ozonation could be applied not only to hospitals wastewater but also as tertiary treatment in urban wastewater treatment plants, allowing the removal of emerging compounds for safe effluent discharge.



KPIs

- ✓ **> 95% removal of pharmaceuticals** present in hospital wastewater
- ✓ **50% reduction of chemical reagents** in the wastewater treatment process

Partner



SDGs impact



+ [INFO](#)

Bioremediation of contaminated aquifers

Sustainable solutions

The Challenge

- ✓ Use of innovative isotopic techniques and sustainable solutions for the decontamination of aquifers

Innovation/Solution

The research group of the University of Barcelona provides two solutions:

- ✓ Circular economy in the remediation of contaminated aquifers: Use of by-products of the food and construction industry in contaminant remediation. We have published studies on nitrates and chlorinated solvents.
- ✓ Bioremediation assessment: diagnosis and quantification of natural attenuation, and induced bioremediation in contaminated aquifers.

Benefits

- ✓ Bioremediation amplifies natural biological actions to remediate pollution.
- ✓ Lower costs, maintenance, operational costs and less disruption of the contaminated environment.
- ✓ Increased remediation cost-benefit.

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Scientific and Technological Centre from the University of Barcelona

Partner



KPIs

- ✓ More than **200 scientific publications** 50 R&D& projects with companies.
- ✓ Different **contaminant classes amenable**: nitrates, sulfates, pesticides, chlorinated organic solvents, BTEX, PAHs, oxygenated fuels, etc.
- ✓ More than 20 years experience in isotope geochemistry.
- ✓ Analytical methods for $\delta^{13}\text{C}$, $\delta^2\text{H}$, $\delta^{15}\text{N}$, $\delta^{34}\text{S}$, $\delta^{18}\text{O}$, $\delta^{37}\text{Cl}$.

SDGs impact



Sustainable water filter to purify and analyze tap water

Purify and analyze tap water

The Challenge

- ✓ Reduce the environmental and economic impact of drinking bottled water.

Innovation/Solution

After 2 successful product launches, TAPP Water is developing a new filter system that provides the cleanest and best tasting tap water in the world: TAPP X, combining the best of Scandinavian design, German engineering and Spanish water filtration expertise

With this innovative product, the company intends to alter consumers' behaviour once and for all by taking away prejudices about (filtered) tap water in the form of an evidence-based approach. In addition, we will use this data to inform water providers and municipalities about tap water quality in their area.

Benefits

- ✓ Providing affordable, clean drinking water to all.
- ✓ Creating awareness about water consumption and battling harmful plastic waste

+ [INFO](#)



Partner

TAPP  WATER

KPIs

- ✓ The initial target about **62 million households** in Europe and North America.
- ✓ The short-term goal is to replace at least **10 billion bottles** by 2023.

SDGs impact



Compact and modular tertiary water reclamation system

Innovative and highly efficient system with low OPEX&footprint

The Challenge

- ✓ To develop a solution to produce high quality reclaimed water as alternative resource for non-drinking purposes with low operational costs and infrastructure needed

Innovation/Solution

The main innovation is the efficient combination of high performance, resilient and proven technology with low OPEX filtration (Cloth media filtration) with robust and advanced design UV disinfection step on a single and compact unit.

The solution is flexible in terms of effluent quality requirements with different system configuration (customization) depending on the necessary reclaimed quality according to the intended use (E.g. agricultural irrigation, golf course irrigation, environmental use or firefighting).

Benefits

- ✓ Safe reclaimed water at a maximum yield
- ✓ Minimum operational costs (OPEX)
- ✓ Minimum infrastructure needed

[+ INFO](#)



Partner



KPIs

- ✓ Demonstrated concept in urban and industrial effluents with mid-size pilot plant. **Firsts systems in operation**
- ✓ Integration time is dramatically reduced. Plug and play-like concept. **Reclaimed water in weeks to months**
- ✓ No need for pre-treatment or chemicals. Compared to conventional systems, **OPEX reduction from 30% to 50%**

SDGs impact



Advanced Decision Support System for Optimal Irrigation

Saturas' precision irrigation systems: efficient water use to address the need

The Challenge

- ✓ Cutting-edge technologies to maximize crop yields and minimize the use of resources

Innovation/Solution

Current Solutions Are Limited: Climate-based Measures basic water needs only, need to base on local empirical data; Solutions Soil-based have high variability and limited accuracy; and the solutions Plant-based present indirect indicators, difficult interpretation, high variability and are expensive.

Stem Water Potential (SWP) technology Is better because have direct measurement from inside plant, physical parameter considered best indication of water status in many crops. This is possible through of a Sensor embedded into the trunk of trees in direct contact with the water tissues

Benefits

- ✓ Water savings estimated at 20% - 50% due to not over-watering. This also leads to a reduction in CO2 emissions from energy savings in the pumping process and an increase in crop profitability
- ✓ Control Fruit Size Apples, citrus, nectarine
- ✓ Control Wine quality - Monitoring quality of grapes
- ✓ Prevent Disease - Hull Rot in Almonds,, Fire Bliht in Pear and more

[+ INFO](#)



Partner



KPIs

- ✓ Won **1.5M Euro** grant from the European Commission, Horizon 2020 SME INSTRUMENT
- ✓ Water savings estimated at **20% - 50%** due to not over-watering.
- ✓ Demonstrated the technology in **Spain, California, Israel & South Africa**
- ✓ **Main crops:** Apple, Almond, Citrus, Walnuts, Wine Grapes.
- ✓ **New Crops in trials:** Pear, Cherry, Peach, Prune, Avocado.

SDGs impact



AIBLOCKS4WATER

Innovative solution to create customized applications for environmental uses,
based in Artificial Intelligence

The Challenge

- ✓ Develop a tool that allows managing water in real time either for floods or droughts.

Innovation/Solution

A combination of blocks of algorithms based on physical equations with others based on artificial intelligence. Pre-feeding these deep learning blocks enables them to make forecasts. Once properly trained and combined, these block combinations allow for immediate predictions with similar accuracy to comparative engineering studies, quicker and with fewer costs.

Benefits

- ✓ Help make real-time reservoir management decisions that maximize safety and storage.
- ✓ Early warning system for damages to the natural environment due to river overexploitation in case of droughts.

[+ INFO](#)



Partner



City: Barcelona

KPIs

- ✓ Forecast **error 20% to 50% less** than current technologies
- ✓ Model's **time to operate and costs are reduced by a factor of 3**
- ✓ Computing time is so small that **it can manage real-time data in the order of few minutes**

SDGs impact



Innovative technologies and processes for the sustainable mining of minerals and metals from seawater brines

The SEA4VALUE project

The Challenge

- ✓ To establish Sea Water Desalination Plants as a source for the mining of complex sets of raw materials from brines

Innovation/Solution

Most projects and technologies related to the recovery of metals and minerals from brine focus on individual elements, making the process economically unprofitable. Sea4Value goes a step further: It is based on a combination of advanced separation technologies and aims to develop a technically and economically feasible process for restoring various elements.

Benefits

- ✓ Production of a new local source and enhanced potential for the recovery of valuable raw materials, minerals and metals
- ✓ Increased technical knowledge, fostering industrial symbiosis and cross-sectorial collaboration
- ✓ New business and employment opportunities
- ✓ New technologies with minimum environmental footprint
- ✓ Waste streams recycled, reduction of brines discharged in the sea
- ✓ On-site chemical production reducing reagents consumption
- ✓ Desalination efficiency : 80% recovery of fresh water + [INFO](#)



Consortium



Chemical, Energy and Water Industries

KPIs

- ✓ 150 Brines analysed
- ✓ 2 Concentration and crystallization **technologies** developed
- ✓ **Concentrator Factor**
- ✓ 8 **New ion-selective technologies**
- ✓ **40-70%** Yield selectivity
- ✓ 9 M&M recovered
- ✓ Mg >80%; B >60%; SC, Ga, V, In, Rb, Mo and Li = 50-70%
- ✓ >85% **Purity**
- ✓ 1 Cutting-edge process (MMBMP)
- ✓ 1 **Moving-lab**
- ✓ 2 **Validation runs** in real environment
- ✓ 1 **Sustainability assessment**

SDGs impact



Demonstration of water loops with innovative regenerative business models for the Mediterranean region

The HYDROUSA project

The Challenge

- ✓ To close the water loop in off-the-grid, arid, and tourism-intensive Mediterranean areas.

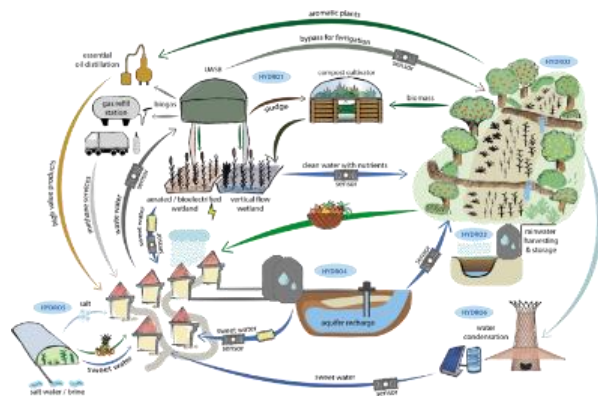
Innovation/Solution

Adoption of nature-based solution for the water management of coastal areas to close the loop. Innovative management of nutrients to boost agriculture and energy production.

Solutions encompass non-conventional water supply sources, including water reuse, remote and domestic rainwater harvesting, advanced desalination processes being tested on 3 Greek islands: Tinos, Mikonos and Lesvos.

Benefits

- ✓ Promotion of local economy and circular value chains.
- ✓ Development of win-win services for the environment, the economy and local communities within the water-energy-food-employment nexus.



Partners



+ 24 other partners
Coordinator: National Technical University of Athens

+ [INFO](#)

*Food Industries and Agriculture;
Built environment*

KPIs

- ✓ **<0.2 €/m³ OPEX for producing water*** (current cost of water in Mediterranean approx. 1 €/m³)
- ✓ **100% Decrease of fertiliser import** in the demo-sites
- ✓ **>50% CO2 savings** in comparison with conventional systems

SDGs impact



Support the implementation and managing of water reuse

The project SUGGEREIX

Chemical, Energy and Water Industries

The Challenge

- ✓ To encourage the implementation of new water reuse schemes.

Innovation/Solution

Definition of strategies for the safe implementation and operation of new water reuse schemes, considering the effects of both classical and emerging contaminants are fundamental for the implementation and replication of water reuse initiatives. Besides, a decision support system tested in 3 different demo sites is a valuable tool for the managing and operation of water treatment/reuse plants.

Benefits

- ✓ The implementation of these actions is going to provide tools for the better managing of water reuse schemes considering costs and risks. Moreover, the information regarding the current legislation, good practices, contaminants and risk factors is going to be gathered in a reference document.

+ [INFO](#)



Consortium



Agència Catalana
de l'Aigua



CETAQUA
CENTRO TECNOLÓGICO DEL AGUA



Centre Tecnològic de Catalunya



Institut Català
de Recerca de l'Aigua



UNIVERSITAT POLITÈCNICA
DE CATALUNYA
BARCELONATECH

KPIs

- ✓ **Design of a Decision Support System** to allow the proper managing of water reuse schemes
- ✓ **Identification of key pollutants** for the safe operation of water reuse schemes considering emerging pollutants

SDGs impact



◀ BACK

Intelligent and sustainable managing of the water cycle in hotels

The project WATERTUR

The Challenge

- ✓ To reduce the water consumption of the hospitality sector in the touristic Mediterranean areas.

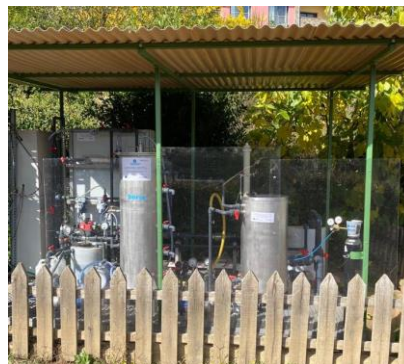
Innovation/Solution

Combination of advanced water treatment systems (green wall with electro wetland and anaerobic membrane bioreactor), smart control tools for the water cycle management and environmental impact evaluation tools (water and carbon footprints) to enable water reuse and reduce its consumption in hotels.

Benefits

- ✓ The implementation of these technologies is going to allow to hotels to have a greater control of their water consumption and implement reuse initiatives in their facilities. These solutions are also going to be translated in economical savings and the reduction of the environmental impact of hospitality sector.

+ [INFO](#)



Consortium



KPIs

- ✓ **100% pathogen removal** in the hotel effluent
- ✓ **64% and 83% DQO removal** with the green wall and bioreactor, respectively
- ✓ **24/7 Control of the water cycle parameters** for the recreative uses in the hotel

SDGs impact



BACK

2. WASTE

Waste management is part of the transition towards a circular economy. Reducing the amount of waste generated and revaluing it, will ensure that waste is managed effectively. Poor quality and poorly designed products with unnecessary packaging result in higher volumes of material ending up in the waste stream. Improving the design of products to be reusable, repairable and recyclable, and optimizing packaging can make a significant contribution to waste avoidance, which is, of course, at the top of the waste hierarchy, above recycling and re-use.

For instance, the use of sensor information to improve management of collection systems, increasing efficiency of recycling patterns or using waste as a means of obtaining energy are some of the existing mechanisms to achieve a more sustainable waste cycle.

Platform for the reuse of household product containers



New valorization alternatives for WWTP waste



Manufacture of recycled products with the contribution of renewable energy



Circular Tuva towels



Surgical clothing reuse



Processing plant for optimal production of Protein



Solid State Fermentation



Transformation of EAF slag into high security asphalts



Recycled plastics from end of life vehicles waste



Recyclable waste selection



Optimization of textile waste management



PET waste recycling



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Smart packaging to ensure quality and cut down food waste.



Liquid waste treatment by Zero Liquid Discharge (ZLD) systems



Transforming imperfect products into opportunities



Obtaining high value products for metal companies



Go Zero Waste APP



Design of Enzyme Technologies from Plant by-Products



Bio-based polymers for high-performance applications



Circular Agronomics



Nutri2Cycle



Turning sewage sludge into fuels and hydrogen



Sustainable Jet fuel from flexible waste biomass



Pay-as-you-throw (PAYT) schemes for waste generation

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Technology for Waste Collection Optimization



Automated glass recovery for waste treatment plants



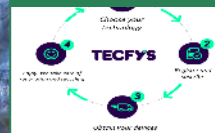
Glass Recovering Revolution



Materials recovery processes



TECFYS



Thermowaste, the complete solution to end landfills



A mobile app to reduce food waste from stores and establishment



From the almond skin to a cholesterol reduction



Organic waste transformation into bioplastics using bacteria



Reuse and recycling of clothing, accessories and footwear



Sun protection, for curtains and blinds



The connected infrastructure solution



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Edible Insects as Sustainable Food Alternative



Sustainable Packaging



Recovery of organic matter from the mixed municipal solid waste



TERRARI



Deodorization of rigid plastic packaging waste to promote its recycling and reuse



New glycol recovery process from used oil



Design of an innovative process to reuse glass contained in MSW



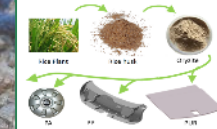
Reuse of saline concentrate and permeate membrane flows in the leather manufacture



Converting organic waste into biomethane



Recycling Of Rice Waste For Automobile Industry



Redefining The Work Wear Industry Dynamic



The Sustainability Platform transforming the fashion industry



Honest brands marketplace



New valorization alternatives for WWTP waste

Characterization of waste generated in WWTP and valorization proposal in Barcelona area

The Challenge

- ✓ New waste management model towards its valorisation and circular economy.

Innovation/Solution

Take advantage of the characteristics of waste in order to convert it into a valuable product. Screenings contain mostly organic matter that can be valorized by:

- ✓ Thermal treatment for energy production.
- ✓ Anaerobic digestion producing biogas and energy.
- ✓ Sands are mostly inorganic material that can be valorized as:
- ✓ Construction material
- ✓ Structuring material in compost or technosols

The conditioning needs to adequate the waste for the valorization process have been determined and taken into consideration selecting the most feasible one.

Benefits

- ✓ Transforming a waste into a valuable product or energy.
- ✓ Reduce landfill disposal.

[+ INFO](#)



Partner



City Case: Barcelona

KPIs

- ✓ Reduction of waste management costs up to **50%**
- ✓ Minimization of landfill disposal

SDGs impact



TERRARI

Recovery of critical materials from waste

The Challenge

- ✓ Design and optimize a process for the extraction and geochemical recovery of scandium from shells from the food industry and other waste from other sectors.

Innovation/Solution

The TERRARI Project wants to achieve the:

- ✓ Characterization of the presence of scandium and other materials in industrial wastes.
- ✓ Design and implementation of techniques for the recovery of scandium, TRs and calcium-rich compounds from these wastes.
- ✓ Evaluation the environmental and economic impact of the recovery processes.

Benefits

- ✓ The use of scandium, as well as all the elements of the Rare Earth group, has taken on great relevance in recent decades due to the rise of new technologies, as well as in many other industrial fields.

[+ INFO](#)



Partner

AMPHOS²¹
SCIENTIFIC AND STRATEGIC ENVIRONMENTAL CONSULTING

KPIs

- ✓ It is expected to **model the experimental** results geochemically.

SDGs impact



Manufacture of recycled products with the contribution of renewable energy

Paper, fruit of a great passion for recycling The Challenge

- ✓ Not only to continue being manufacturers of 100% recycled, recyclable and reusable products from waste but also helping the end users of our products to be more sustainable.

Innovation/Solution

- ✓ Alier developed a technology to obtain paper pulp from recovered paper and cardboard, including some types that are very difficult to recycle, such as moisture resistant papers, cardboard for liquids, plasticized, complexes with aluminum, glued papers and other materials.
- ✓ Our technology and way of working have the endorsement of the following certifications: ISO 9001/2015, ISO 14001, PEFC, FSC® and Isega Certifications.

Benefits

- ✓ Use of the biogas generated in the treatment plant as a new energy source.
- ✓ Recovery of the waste generated through agricultural application.

+ [INFO](#)



Partner



KPIs

- ✓ More than **300.000 tons of paper and cardboard** are recycled. They are working to recycle 12.000 tons of plastic per year.
- ✓ To produce **24 thousands tons of healthy paper** (antifungal paper) for construction industry.
- ✓ Production of **15.000 tons of 100% recycled paper** for bags, so as to replace in the market the consumption of plastic bags.

SDGs impact



Circular Tuva towels

Collecting the disused towels and turn them into industrial cloths.

The Challenge

- ✓ Manufacture of towels incorporating recycled raw materials (polyethylene terephthalate, or PET).

Innovation/Solution

Gyms throw out about 80% of their towels annually, representing a huge amount of waste. Arpe Barcelona, a manufacturer of technical fabrics, has developed an alternative microfiber towels that include a repurchase option at the end of their useful life.

With collaboration with DIR gym chain for the recovery of its disused towels, ARPE transforms into eco-designed cloths approved for industrial cleaning. And I agree with the cleaning company SIRSA to use these rags.

Benefits

- ✓ Apart from using recycled raw materials, many more can be used in a wash towels, with the consequent saving of soap, electricity and water.

[+ INFO](#)



Partner



KPIs

With this system can **save 168 tons of CO₂**, 1,722 m² / year of textile waste and **300kg / year of fabric** with the new packaging between 2018 and 2020.

SDGs impact



Surgical clothing reuse

Eco-friendly integral health care solutions

The Challenge

- ✓ Achieve sustainability reducing waste in the healthcare system.

Innovation/Solution

With the aim to face the new EU regulation to comply surgical coverage with specific properties to be more aseptic, AXIOMA has developed the STERIPAK, a reusable fabric that substitutes disposable products in the OR. It is an eco-innovative, circular, reusable and sustainable solution. Once the reusable surgical coverage reaches the end of its cycle, it is reused as a raw material for other functions.

The company has the license, modern facilities and highly automated machinery that allow them to offer both standardized and personalized solutions.

Benefits

- ✓ Less waste in every surgical procedure
- ✓ Highest quality textiles used in every surgical cloth



Partner

AXIOMA

www.axiomasoluciones.com

+ [INFO](#)

KPIs

- ✓ Environmental impactation **reduction of 3-6 times less than a single use material**

SDGs impact



Processing plant for optimal production of Protein

New Decolourised Hydrolysed protein, completely natural and with a high nutritional value

The Challenge

- ✓ Our overall objective is to bring to the market a new solution which will not only reduce the environmental impact of produced in slaughterhouses but optimize the protein production process for animal and human feed purposes too, in a reliable and cost-effective way.

Innovation/Solution

- ✓ Our innovative HYDROBLOOD processing plant will make a difference within the current market worldwide, since it does not include cold nor heating treatments for the process of obtaining a new high-quality protein from slaughtered animal's blood.

Benefits

- ✓ With our innovative processing plant, the 100% of protein content can be recovered from animal's blood, and converted into a high added-value product

+ [INFO](#)



Partner



KPIs

- ✓ The treatment of a high polluting waste (and its associated costs) convert it into a high added value product that will suppose an **increase by around 5% in their annual turnover**
- ✓ Lower production costs: **(<1 €/kg)** and higher efficiency (19%) product obtained per liter of blood.
- ✓ Annual energy savings: Plant of **8 m3 blood / day → saving 70,000 kg CO2/year.**

SDGs impact



Solid State Fermentation

Potentially sustainable technology

The Challenge

- ✓ Transform organic matter into value-added products

Innovation/Solution

The use of solid-state fermentation has been focused on obtaining value-added products of substantial agronomic and industrial interest, such as hydrolytic enzymes, polysaccharides, and biodegradable bioplastics as an alternative to that conventional petroleum-derived. These processes use agro-industrial solid wastes as low-cost raw materials, such as brewer spent grains and grape bagasse or the olive-mill solid waste. This technology has also been used as an alternative to obtain compounds with biostimulant activity from underexploited sources such as sewage sludge and digestates, which would serve as a complement to the nutrients recovered from the same treatment facilities.

Benefits

- ✓ Low cost processing of a wide variety of waste with limited water consumption

+ [INFO](#)



Partner



Beta

Biodiversitat, Ecologia,
Tecnologia Ambiental i Alimentària

KPIs

- ✓ **Energy savings up to 50%** (compared to liquid processes).
- ✓ **Water needs up to 70% lower** than in liquid phase.
- ✓ **Ability** to process a **wide range of solid organic wastes** (Versatility).
- ✓ **Easy integration** with existing technologies

SDGs impact



Transformation of EAF slag into high security asphalts

Generation of co-products for their high intrinsic value

The Challenge

- ✓ Return products to their lifecycle.

Innovation/Solution

Develop new techniques for the valorization and transformation of white slag in products with high added value and promote a sustainable and circular economy approach for use in other industrial sectors.

The valorization of white slag for the manufacture of new components or tools will help advance the reinvention of the Spanish steel sector as well as make Celsa Barcelona more competitive.

Benefits

- ✓ Recycling steel and transform it into a value-added product



Partner



KPIs

- ✓ **240.000 tn** aggregates/year avoided extraction from natural sources
- ✓ **30%** waste avoided to send to landfill

SDGs impact



+ [INFO](#)

Recycled plastics from end of life vehicles waste

Innovative technologies from waste transformation into by-products

The Challenge

- ✓ Return products to their lifecycle.

Innovation/Solution

Develop new techniques for the valorization of plastics from end of life vehicles waste.

Implementation of IR technology for visible plastic separation by type of plastics (PP, PE, PS, ABS) with more than 85% accuracy.

Benefits

- ✓ Recycling end of life vehicles waste.



Partner



KPIs

- ✓ **15%** recycled waste from end life vehicles
- ✓ More than **85%** visible plastics separation

SDGs impact



[+ INFO](#)

Recyclable waste selection

With advanced robotics

The Challenge

- ✓ Automating valuable waste sorting tasks

Innovation/Solution

Despite of the high automation level of sorting facilities, they still include some tasks where workers need to manipulate waste.

Aiming to improve health and safety as well as working conditions of our personnel, the WISE project seeks to develop and validate an innovative recyclable waste selection technology based on a robot equipped with artificial vision and artificial intelligence.

The project includes the design and development of the different components of the robotic prototype, such as the machine vision system, the machine learning and deep learning modules robotic grasping system and its supports..

Benefits

- ✓ Improving health and safety conditions in sorting tasks
- ✓ Increasing of valuable material recovery ratios
- ✓ Targetting “zero waste to landfill”

[+ INFO](#)



Partner



KPIs

- ✓ Production **50-60 picks/minute**
- ✓ **95 % availability**
- ✓ **Easily coupled** to existing processes, it works **24/7** in a large range of waste flows
- ✓ It boosts **efficiency, productivity and safety**-directly improving customers bottom line with higher product purity

SDGs impact



Optimization of textile waste management

From waste to resource that enters the cycle of the circular economy

The Challenge

- ✓ To classify and conditioning textile waste to obtain new fibers fulfilling the requirements of textile manufacturers in Catalonia.
- ✓ Establish an economic model and the bases of a framework agreement between the agents of the value chain.

Innovation/Solution

It is a demonstrative project of industrial symbiosis aimed to design a process that optimizes the recycling and recovery at a regional level (Catalonia) of the flow of clothing that the social economy company HUMANA currently allocates for recycling in Southeast Asian countries.

Textile waste has been separated by color and fibers. After non-textile elements removal and a crushing process, a recycled yarn in three different colors has been obtained.

Benefits

- ✓ A step towards sustainability and circular economy
- ✓ Reduction of CO₂ emissions thanks to the shift to a local approach. [+ INFO](#)



Partner



HUMANA
Fundación Pueblo para Pueblo

Supported by



**Agència de
Residus de
Catalunya**

KPIs

- ✓ **Upcycling** locally, within the same territory that generates the textile waste
- ✓ **Technical feasibility** of the obtained **secondary raw materials** within current textile facilities
- ✓ **Economic feasibility** under a **framework agreement** between the value chain stakeholders

SDGs impact



PET waste recycling

New secondary raw materials from PET packaging waste recovered in sorting plants

The Challenge

- ✓ Recovering PET waste in order to reintroduce it into a new production cycle as raw material.

Innovation/Solution

The factory has been designed to transform PET plastic waste bales, coming from sorting facilities, into a new secondary raw material called Cicklapet, which is suitable for packaging and bottle2bottle applications in the food industry.

To achieve this goal the facility includes highly specialized equipment and cutting edge technology for classifying, conditioning and producing 8 mm flakes of different colour. Obtained Cicklapet has a suitable quality to be used as raw material for the production of new bottles and packaging for the food industry.

Benefits

- ✓ Reduction of GHG emissions and Carbon footprint
- ✓ Reduction on pressure on natural resources as well as promoting respect for the environment.
- ✓ Plastic waste reduction, avoiding ecosystem damages

[+ INFO](#)



Partner

circularis



KPIs

- ✓ Throughput production of **30,000 tons of rPET flake per year.**
- ✓ Circularis applies cutting edge technologies for an efficient consumption of water and energy.

SDGs impact



Smart packaging to ensure quality and cut down food waste

Quantitative and cost-effective mobile based solution

The Challenge

- ✓ Reduce food waste due to expiry date estimations, invasive quality control and cold chain breaks.

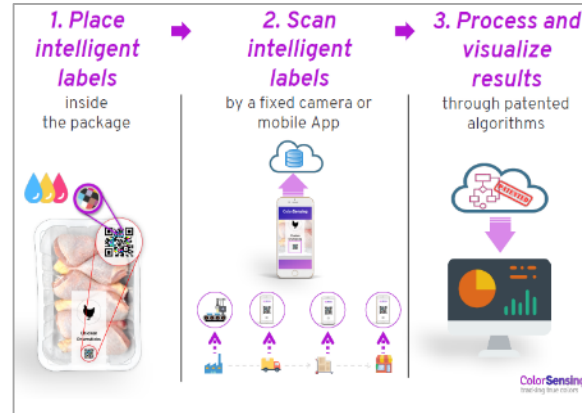
Innovation/Solution

An intelligent label for food packaging with QR code shape with only a few pixels containing smart inks, that change their color depending on parameters inside the food packaging to monitor freshness. The patented algorithms measure those parameters just taking a picture with a smartphone, been able to correct any color distortion that might occur. The solution is based in an innovative technology (TRL6) of a quantitative, multifunctional, cost-effective and non-invasive food freshness indicator to reduce food waste. In addition, The company has already found an ecosystem of industrial partners interested in the technology asking to develop prototypes up to a market-ready solution.

Benefits

- ✓ Better estimate expiration of packaged food, increasing in many cases the consumption period and reducing food waste

+ [INFO](#)



Partner

Color Sensing
tracking true colors

KPIs

- ✓ **Values** 100% controlled, non-invasive control, Packaging analysis, Avoid returns, Real info vs expiry date, cold chain break control.
- ✓ **Measuring** Packaging gases (CO₂, O₂, Ripening gases (CO₂, O₂, amines, H₂S, ethylene, etc.) and Temperature.

SDGs impact



Liquid waste treatment by Zero Liquid Discharge (ZLD) systems

Treatment of liquid waste generated in all types of industrial activities

The Challenge

- ✓ To optimize the use of water in industry, promoting its reuse, and to recover primary resources contained in the wastewater thanks to the use of zero-discharge technologies.

Innovation/Solution

Our Zero Liquid Discharge solutions are designed for the treatment of industrial wastewater. The implementation of a ZLD system allows the companies to reuse the wastewater that they produce and to recover valuable resources that are dissolved in this liquid waste.

Benefits

- ✓ Elimination of a hazardous liquid waste.
- ✓ Water reuse.
- ✓ Recovery of valuable resources for its reuse or commercialization.
- ✓ Reduction of operational costs.
- ✓ Valuable resources can be recovered for its reuse or commercialization.

[+INFO](#)

MÁS DE 400 PROYECTOS EN TODO EL MUNDO



Partner



condorchem envitech
smart ideas for wastewater & air treatment

KPIs

- ✓ More than **95% of water is recovered** and can be reused.
- ✓ **Waste management costs** are practically eliminated.
- ✓ **Higher ROI** than conventional wastewater treatments.

SDGs impact



Transforming imperfect products into opportunities

Giving the fight for better food usage

The Challenge

- ✓ Reducing food loss and waste; guaranteeing the right to a healthy diet and creating job opportunities for collectives at risk of social exclusion

Innovation/Solution

Fundació Espigoladors is a non-profit organisation that contribute to reducing the food waste and losses while making the task of the primary sector visible, as well as raising awareness about the value of food.

Most of the fruits and vegetables that they collect are distributed to social entities in order to reach people who do not have access to them. They transform the other recovered produce in preserves while giving job opportunities to people at risk of social exclusion.

Benefits

- ✓ Empowerment of hundreds of committed farmers.
- ✓ Tons of food saved from going to waste.
- ✓ High awareness achieved in local communities.
- ✓ Provide access to healthy, nutritious food to people in vulnerable situations.

+ [INFO](#)



Partner



espigoladors

City Case: El Prat de Llobregat

KPIs

- ✓ **2.525.516 portions served** (300 gr.)
- ✓ **816 tons** of food saved
- ✓ **431 tons of CO2** avoided emissions
- ✓ **503 millions** of litters of water saved

SDGs impact



Obtaining high value products for metal companies

Increasing the environmental and economic benefits through innovative technological schemes

The Challenge

- ✓ Develop new processes to transform waste into new products, adding new fluxes to the circular economy, avoiding waste management costs (economical and environmental) and considering waste as a secondary raw material.

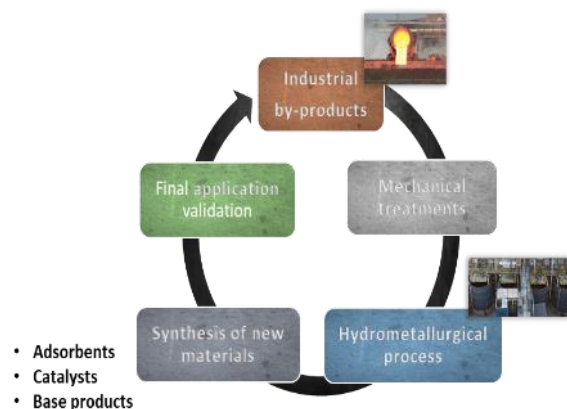
Innovation/Solution

Inorganic waste rich in metal silicates is landfilled or valorized in low valued applications. Using an innovative hydrometallurgical process, it is possible to obtain high value materials such as adsorbents or catalysts from the residue in a zero waste scheme. The process is applied to industrial metal companies for the valorization of their by-products.

Benefits

- ✓ Reduce waste management cost and impact.
- ✓ Synthesize new commercial products.
- ✓ Opportunity for new business models.
- ✓ Contribute to the circular economy. Reduce the need of primary raw materials.

[+ INFO](#)



Partner



KPIs

- ✓ Up to **90%** metal fraction separation
- ✓ Synthesis of adsorbents with more than **90%** purity
- ✓ Turn waste management costs in net profits with payback time **3-7 years**
- ✓ **10-30% reduction** on environmental impact associated with current practices

SDGs impact



Sustainable Packaging

GC Tissue Range

The Challenge

- ✓ Increase product sustainability focusing on packaging and package for our tissue products, both for mass market and professional sector:
- ✓ Solution applicable to all product ranges and current manufacturing process.
- ✓ 100% raw material renewable, recyclable or compostable.
- ✓ 100% containers and packaging plastic / materials recyclable / compostable.
- ✓ Target: 47% reduction in virgin plastic 2020 (680 tons)

Innovation/Solution

4 solutions implemented:

- ✓ New generation of stretch film that thanks to its high number of layers increases performance
- ✓ Recycled plastic with different % (between 50%-70%) for different product applications
- ✓ 100% home compost film.
- ✓ 100% recyclable kraft boxes.

Benefits

- ✓ Reduction of virgin plastic, Increase plastic circularity (the recycled plastic comes from supermarkets and hypermarkets), Compost, Reduction of the whitening of the carton boxes (less inks)

[+ INFO](#)



Partner



City: La Riba, Tarragona

KPIs

- ✓ New compostable film
- ✓ Recycled plastic from 50-70%
- ✓ New generation of stretch film

SDGs impact



Go Zero Waste APP

Enabling local, sustainable and waste-free consumption

The Challenge

- ✓ Facilitate the way for a more sustainable and local consumption

Innovation/Solution

Go Zero Waste is a mobile app that helps you find local bulk stores and plastic-free products around you thanks to a collaborative map. It also provides simple challenges to promote new habits and actions towards a more sustainable lifestyle.

More recently, and in collaboration with town councils and companies, they have also created the campaign [Mou-te pel zero!](#) to which you can access through the Go Zero Waste app, with the aim of promoting waste reduction and local trade through inclusive gamification.

Benefits

- ✓ Reduction of plastic consumption.
- ✓ Support for local trade and local products.
- ✓ More responsible food system.
- ✓ Sustainable consumer behavioural change through gamification.

+ [INFO](#)



Partner



City case: Barcelona

KPIs

- ✓ More than **2,000 local business** involved.
- ✓ **International scale** (Europe and Latin America).
- ✓ **+100 challenges** for a more sustainable life.

SDGs impact



Design of enzyme technologies from plant by-products

Technological and product innovation in the sector

The Challenge

- ✓ Reduce the use of conventional pesticides and chemical fertilizers

Innovation/Solution

The aim of the project is to design the basis for the development of a Biotechnology Process to obtain bioactive Molecules with biostimulating action and/or Phytosanitary low-risk, from the protein fraction of different local plant sources.

The raw materials used in the processes will be local sourced (by-products from the Agri-Food industry-circular theory) which will allow, beforehand, stability both in term of productivity and costs

Benefits

- ✓ Using products of natural (plant) origin, promotes the sustainable development of crops



Partner



KPIs

- ✓ **29 plant sources and by-products** of the agri-food industry were studied.
- ✓ M3-M7-and M11 were the best prototypes to control root-knot nematodes (soil pest).
- ✓ M3, M7, M11: **73% - 74% reduction of penetration of nematodes** in cucumber crops.
- ✓ M7: **89% reduction on reproduction** in cucumber crops and **82% for M11**.

SDGs impact



[+ INFO](#)

Bio-based polymers for high-performance applications

Polycarbonates and polyesters from agroalimentary (citrus) waste

The Challenge

- ✓ Substitute oil-based polymers for bio-based polymers for high added-value applications, such as functionalized coatings.

Innovation/Solution

ICIQ has developed a catalytic technology compatible with other terpenes extracted from biomass, besides limonene, to generate polycarbonates and polyesters, a commercial compound extracted from orange peels (waste from orange juice industry). The chemical structure of limonene allows to functionalize these polymers, generating a range of products, including coatings. ICIQ collaborates with companies and universities to develop new applications for these products.

Benefits

- ✓ Bio-based, non-food source. Carbonates incorporate CO₂
- ✓ Resulting coatings offer excellent functionalization opportunities
- ✓ Non-toxic and biocompatible

+ [INFO](#)



Partner



KPIs

- ✓ Currently developing **new product applications** alongside industrial and academic partners.
- ✓ Technology in development, production of **hundreds of grams** is possible, paving the way for pilot scale.
- ✓ **Wide range** of possible applications including coatings, composites, additives, compatible with biomedical applications.

SDGs impact



Circular Agronomics

Efficient Carbon, Nitrogen and Phosphorus cycling in the European Agri-food System

The Challenge

- ✓ Sustainable circular management of carbon, nitrogen and phosphorus in the European agri-food system

Innovation/Solution

- ✓ Novel soil organic amendments from agricultural and industrial byproducts to decouple C, N and P streams and facilitate soil C sequestration.
- ✓ Cropland and grassland management practices to optimize N&P nutrient cycling and minimize losses.
- ✓ Livestock management to minimize GHG emissions and optimize manure characteristics.
- ✓ Food-industry wastewater treatment for recovery of C-rich compounds for reuse on farms, towards the circular economy.

Benefits

- ✓ Reduction of environmental impacts at farm level
- ✓ Improvement of soil fertility and increase of nutrient use efficiency
- ✓ Increase sustainability of food industry

+ [INFO](#)



Grant Agreement 773649

Partner



+ 18 project partners

KPIs

- ✓ **Reduced nutrient surplus per agricultural area** (-20% for N and P) and increased nutrient efficiency on a yield-scaled basis.
- ✓ **Reduced direct emissions to air and water** (-10-15% for N) and reduced indirect emissions.
- ✓ **Increase net stabilizable carbon stocks** in cropland by at least 0.4 % per annum.
- ✓ **Reduction of carbon-and nutrient-rich waste** (-10%)

SDGs impact



Nutrient2Cycle

Transition towards a more carbon & nutrient efficient agriculture in Europe

The Challenge

- ✓ Assess the current Nitrogen, Phosphorus and Carbon flows looking into existing management techniques in different farms across Europe and analyzing their related environmental problems.

Innovation/Solution

- ✓ Map the current flows and gaps in C, N and P cycles over three major agricultural pillars: livestock, plants and processing systems
- ✓ Implement a toolbox with indicators to measure sustainability & evaluate trade-offs between the current practice and innovative farming systems.
- ✓ Impact calculation at regional & EU level.
- ✓ Evaluate how agro-products obtained via more sustainable processes can aim for ecolabelling, and how this could affect consumer behavior (willingness to pay).

Benefits

- ✓ Tackling the existing nutrient flow gaps in Europe will help decrease greenhouse gas emissions, reduce soil degradation and improve EU independence for energy and nutrients.

[+ INFO](#)



Nutri2Cycle

Nurturing the Circular Economy

Partners:



+ 18 project partners

KPIs

- ✓ Create more **efficient and sustainable farm** business models for **nutrient recovery and recycling**.
- ✓ Assess how the products obtained can aim for **labelling and reach end-users**.
- ✓ **Reduce emissions and increase self-resilience of Europe** for food, energy and nutrients

SDGs impact



Turning sewage sludge into fuels and hydrogen

The conversion of organic waste biomass into synthetic fuels and green hydrogen

The Challenge

- ✓ The processing of organic industrial waste biomass directly into transportation grade biofuels.

Innovation/Solution

The project implements a new integrated process combining Thermo-Catalytic Reforming (TCR®), with hydrogen separation through pressure swing adsorption (PSA), and hydro deoxygenation (HDO), to produce a fully equivalent gasoline and diesel substitute (compliant with EN228 and EN590 European Standards) and green hydrogen for use in transport.

This will be the first of its kind to be built anywhere in the world, processing organic industrial wastes directly into transportation grade biofuels which will be a demonstration showcase for future sustainable investment and economic growth across Europe.

Benefits

- ✓ Addressing environmental and social needs with sustainable energy development.

+ [INFO](#)



Partner

LEITAT
managing technologies

KPIs

- ✓ It will process **2,100 tonnes** per year of dried sewage sludge into **210,000 litres** per year of liquid biofuels and up to **30,000 kg** of green hydrogen.
- ✓ **> 80% GHG gas saving.**
- ✓ Production of fully **equivalent gasoline and diesel substitute.**

SDGs impact



Sustainable Jet fuel from flexible waste biomass

FlexJet will build a pre-commercial demonstration plant to produce advanced aviation biofuel

The Challenge

- ✓ Produce sustainable and cost-competitive aviation fuel (SAF) from waste vegetable oil.

Innovation/Solution

The process combines the production of SAF through biofuel refining (SABR technology) for the upgrading of biodiesel from organic waste fats, with the Thermo-Catalytic-Reforming (TCR) providing green hydrogen for the process. The project will deliver respective environmental and social sustainability mapping and it will validate a comprehensive exploitation business plan, building on already established end user interest with existing offtake agreements already in place with British Airways. In a combined, committed and dedicated research effort the project has leading researchers, industrial technology providers, including airline takers and renewable energy experts from across Europe.

Benefits

- ✓ It facilitates the medium- and long-term carbon reduction.
- ✓ Development and growth of SAF.

+ [INFO](#)



Partner

LEITAT
managing technologies

KPIs

- ✓ Production of **1,200 tonnes of jet fuel** from 3,600 tonnes of waste vegetable oil per year and 3,482 tonnes of dried organic waste.
- ✓ **First pre-commercial demonstration plant** for the production of **25,000 tonnes per year of SAF**.
- ✓ **fully equivalent jet fuel** → compliant with ASTM D7566 Standards.

SDGs impact



Edible Insects as Sustainable Food Alternative

The conversion of food by-products in a sustainable and high-quality protein

The Challenge

- ✓ The use of insects as alternative sources of protein addresses the nutritional needs of the growing population, offering a sustainable alternative to the food of the future based on circular economy strategies.

Innovation/Solution

The proposal covers everything from the breeding of insects to their processing for protein, and their subsequent formulation into products for animal and human food. Specifically, it seeks to overcome production barriers throughout the value chain of insect breeding, studying innovative technologies and valuing by-products of the agri-food sector as substrates for the breeding itself. This reduces the environmental impact of both protein food production and waste management.

Benefits

- ✓ Insect breeding is more sustainable, because it has a higher degree of food conversion, requires less water and land for breeding and produces less greenhouse gases.

[+ INFO](#)



Partner

LEITAT
managing technologies

KPIs

- ✓ **3485 litres**
(compared with pork)
and 30985 litres
(compared with beef)
of water saved per kg
of protein produced
- ✓ **4 kg (compared with pork) and 43 kg**
(compared with beef)
of feed saved per kg
of protein produced

SDGs impact



Pay-as-you-throw (PAYT) schemes for waste generation

Moving towards a European recycling society with a high level of resource efficiency

The Challenge

- ✓ Residual waste reduction improving the waste separation at source and recycling.

Innovation/Solution

PAYT asks households to pay when they dispose of (mixed) waste. Implementation of technology in the municipal waste collection allows identify individualized bins in door-to-door collections or the waste producer, citizens or economic activities, with smart street containers with controlled access devices that will only unlock after identification by a personalized card.

Benefits

- ✓ This economic instrument encourages participation in the waste separation at source
- ✓ PAYT helps raise awareness to improve selective collection and recycling
- ✓ Economic savings in mixed waste treatment and increase revenues in recyclables
- ✓ Co-responsibility and citizen satisfaction with a fair waste rate.

[+INFO](#)



Partner



KPIs

- ✓ **Increase separate collection** rates of waste and recycling **up to 80%** achieving EU targets.
- ✓ Application of the **polluter-pays principle**: Fairer Municipal Waste Taxation for citizens and economic activities, rewarding those who have less waste generation.
- ✓ Reduce costs of **adverse environmental and health impacts** of mixed waste collection and treatment.

SDGs impact



Technology for Waste Collection Optimization

Better route management, the solution for small to medium sized waste haulers

The Challenge

- ✓ Improve efficiency of waste collection services

Innovation/Solution

Whether for only a small truck operation or for a large fleet, data obtained with on-board technology is vital for tracking all aspects of daily recycling and waste collections.

RFID, telematics and weighting solutions give easy to use features such as container management, filling level, route planning and optimization, vehicle tracking, etc., all of them strategic for the sustainable management of the waste collection services.

Benefits

- ✓ Optimized routes with less Km driven, decreasing fuel consumption, gas emissions and improving efficiency
- ✓ More transparency about all processes during the collection
- ✓ Continuous quality improvement service due to prompt access to information

[+INFO](#)



Partner



KPIs

- ✓ **Rugged components:** Thanks to the hermetically sealed weight sensors, the system resists the harshest environments.
- ✓ **Cost efficiency:** To not underload material or avoid unnecessary trips
- ✓ **Increasing Competition:** Continuous need to improve efficiency and increase profitability

SDGs impact



Automated glass recovery for waste treatment plants

Highly Innovative solution based on artificial vision techniques

The Challenge

- ✓ Attain a high percentage of glass recycling effectiveness in waste energy plants.

Innovation/Solution

The aim of the VidReBuig project is to develop a technology based on artificial vision techniques for automated glass retrieval in waste treatment plans from solid waste flows. It is able to recover up to 75% of glass in waste incineration plants. It could recover about 4 million tones of glass a year in the European Union environment, that otherwise would end in a landfill.

Benefits

- ✓ More effective glass recycling for waste plants
- ✓ Reduce waste in landfills



Partner



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KPIs

- ✓ The project would allow to **recover about 4 million tonnes of glass per year**
- ✓ **More than 75% glass extraction performance**
- ✓ Increases the obtaining of **other recyclable materials and fuels** derived from waste

SDGs impact



Glass recovering revolution

High performance Optical Sorter for glass collection from Waste

The Challenge

- ✓ Recover the glass fraction in refined MSW.

Innovation/Solution

40% of all the glass waste ends up in mixed MSW plants (which typically contain 7% of glass). Instead of being disposed of in selective-waste collection, it ends up in landfills or is composted/incinerated with the remnant waste. SEEGLASS has developed a high-performance optical sorter based on computer vision and a pneumatic rejection system.

This project will build the preconditioning process line, optimize the current computer vision system, as well as its mechanical and pneumatic design, integrate both the process line and the glass sorting solution into a system of and validate its internal viability with real MSW from different countries

Benefits

- ✓ Will allow the treatment plants to significantly reduce costs from waste disposal fees
- ✓ offers end-users additional revenue from recovered material

+ [INFO](#)



Partner



KPIs

- ✓ Will allow the treatment plants to significantly reduce **costs from waste disposal fees (50€/Tonne EU average and rising)**
- ✓ The goal is to achieve **80% glass recovery, with 99% purity**

SDGs impact



Materials recovery processes

Managing resources in a sustainable way

The Challenge

- ✓ Transform the flow of production processes that promote the prevention of waste generation

Innovation/Solution

From the SSR-UPC, two projects are being carried out that seek to transform process flows to improve resource management:

- ✓ Recovery of precious metals from electronic waste using biotechnological systems, is based on the design, construction and installation of valuable metal extraction plants contained in disused electrical and electronic equipment, as well as on the advice and maintenance of the facilities.
- ✓ Recovery of raw materials from residual gaseous effluents.

Benefits

- ✓ Natural resource management in a sustainable way
- ✓ A cheaper and less polluting alternative
- ✓ Low energy cost (room temperature)
- ✓ Technology extensible to other valuable metals

+ [INFO](#)



Partner



KPIs

- ✓ Of the proposal for the **recovery of electronic waste metals** is expected to reach an international market in 5 to 6 years
- ✓ The return on investment required is estimated at **2.8 years**.
- ✓ **85%** copper recovery in only 48 h

SDGs impact



Tecfys

Where your technology flows

The Challenge

- ✓ The increasing awareness in sustainable models brings the necessity to develop global strategies that include the complete life cycle of products, from the acquisition, renovation, second life, recycling and disposal

Innovation/Solution

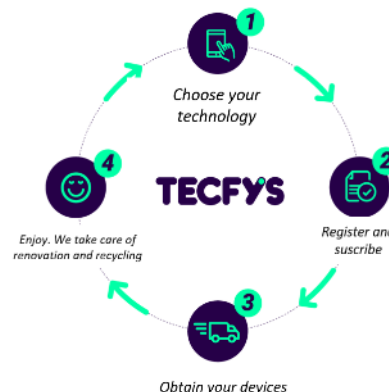
Tecfys starts a new connection between technology and people. Tecfys provides all the technology of your life -from you phone to your fridge- with a monthly subscription. We remove your old devices, bring the new ones and will replace them in their optimal time of renewal. The new approach to technology is by flexible and smart use, not ownership.

We believe in a world where managing the flow of technology is easy and sustainable.

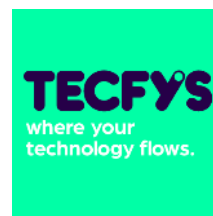
Benefits

- ✓ Optimize the use of your cash flow: moving from buying to using (pay per use).

[+ INFO](#)



Partner



KPIs

- ✓ Minimize the **total cost of the technology cycle**: mastering product offering and price, manage depreciation curves, residual values, refurbishing and recycling processes.
- ✓ **Reduce friction** in the access to technology: simplifying customer experience, seamless integration of several parties.

SDGs impact



Thermowaste, the complete solution to end landfills

Technology for complete recycling and giving value to the recovered materials.

The Challenge

- ✓ To recover 100% of the materials contained in the waste in just 30 min.

Innovation/Solution

A sustainable and definitive solution that accelerates social transformation towards a Circular Economy. They convert municipal solid waste into clean materials and recover them in their entirety to give them a second use, at the same time that they provide decent work to many families.

The project is aimed at administrations and organizations, public or private, that somehow influence or participate in waste management and seek a sustainable solution with short-term results.

Benefits

- ✓ Robust technology that allows you to quickly process large volumes of waste, taking up very little ground space.
- ✓ Low methane gas emissions from their plants.

[+ INFO](#)



Partner



KPIs

- ✓ A Thermowaste plant with 5 process lines (a total of 10 reactors), prevents **1,200 tons** of urban solid waste per day from being thrown into the landfill.
- ✓ A **1000Tn/day** plant prevents more than **3.000.000m3** of methane go to the atmosphere

SDGs impact



A mobile app to reduce food waste from stores and establishment

Users can purchase edible food that otherwise would be thrown out at the end of the day

The Challenge

- ✓ Reduce waste of unsold food from establishments.
- ✓ Reduce the 8% of greenhouse gas emissions generated from wasted food.

Innovation/Solution

Too Good To Go is an app that provides a marketplace to connect businesses who have surplus food with members of the public who want to rescue this food.

Customers order a “magic bag” full of perfectly edible food that stores, and restaurants have to throw out at the end of the day. This surplus food is obtained by a discount on the retail price and then is collected it from the stores.

Benefits

- ✓ Inspire and empower everyone to take action against food waste.
- ✓ Attract customers to consume surplus food by offering a discount.



Partner



Too Good To Go

+ [INFO](#)

KPIs

- ✓ **1/3 of all food** produced worldwide **is wasted**
- ✓ **+40,000,000 meals saved** globally since the company started on 2016
- ✓ Equivalent to **100,000 tonnes of Co2** saved
- ✓ App available in **15 countries**

SDGs impact



From the almond skin to a cholesterol reduction

An antioxidant fiber of almonds and hazelnuts as a natural medicine

The Challenge

- ✓ Maximise the value of agricultural products.
- ✓ Increase jobs in rural areas.

Innovation/Solution

Unió Nuts is a Spanish leader cooperative of nuts that seeks demographic balance in the rural field with a commitment to the territory, to the environment and to collaborating with our associated cooperatives to offer the markets natural products of the highest quality.

Focused on innovation, it has developed new applications of the products in order to create more functional, healthier, highest-quality food. One of their known patents is the obtainment of a natural, antioxidant fibre that reduces cholesterol. This fibre is named Fiberox.

Benefits

- ✓ Promote rural development.
- ✓ New natural products to reduce cholesterol.



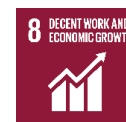
Partner



KPIs

- ✓ **Almond and hazelnut skin are byproducts without commercial value.**
- ✓ Between **4,5-6%** of almond skin is obtained in blanched process
- ✓ About **2% of hazelnut** skin is obtained in roasted process.
- ✓ **Fiberox** help to **increase the final price** that farmers receive for their crops

SDGs impact



+ [INFO](#)

Organic waste transformation into bioplastics using bacteria

First test in bioplastic bags in industrial scale

The Challenge

- ✓ Transform organic waste into bioplastic.

Innovation/Solution

Venvirotech has developed a process for bioplastic production using bacteria. The system turns organic matter, such as food waste, into a product that can be used as a biodegradable alternative to single-use plastic.

The biotech startup began its pilot phase near Barcelona, at a BonArea supermarket plant, where they were able to develop a technology test based on bioplastic bags on an industrial scale with a potential customer. It is currently developing new pilots, including waste from Nestlé coffee production.

Benefits

- ✓ Provide an alternative bioplastic bags and other plastic products.
- ✓ Reduction of greenhouse emissions.



Partner



KPIs

- ✓ **4 tons** of organic waste management per day in each VE-Box.
- ✓ **One day process.**
- ✓ **3%-25% Yields** of conversion to bioplastic.
- ✓ **5%-40% Savings** in organic waste management.

SDGs impact



[+ INFO](#)

Reuse and recycling of clothing, accessories and footwear

Recover, reuse and recycle!

The Challenge

- ✓ Offer a service that allows to recover and gives a second life to clothes that are no longer used

Innovation/Solution

The Veritas Textile project consists of offering customers through the online shopping service the possibility of donating clothes they no longer use, once the collection is made, it is taken to the Humana warehouses, where the recovery, reuse and recycling process begins to give it a new use, the textile that can be reused will be treated and managed to take it to its sustainable fashion stores (generating resources for development cooperation projects). The textile is in a state that does not allow its reuse, it is sold to recycling companies so that they can make other products.

Benefits

- ✓ Contribute to saving resources and protecting the environment
- ✓ Generate green employment and contribute to the social economy.

+ [INFO](#)



Partner



KPIs

- ✓ Only in Catalonia, around **20 kg of textile waste** per inhabitant is generated each year.
- ✓ The objective is **5000 Kg** of textile waste collected / year, **15 tons of CO2** saved per year.

SDGs impact



Sun protection, for curtains and blinds

Semi-translucent technical fabrics made of 100% recycled polyester

The Challenge

- ✓ The use of recycled PET yarns

Innovation/Solution

The recycled polyester yarns used in manufacturing have quality and characteristics identical to those produced with raw materials virgins. Planet FR and Ecoplanet FR avoid glare and They offer good visual comfort while maintaining privacy. Both have a good absorption coefficient acoustic and Greenguard certified as low emission fabrics.

The company that supplies the recycled polyester raw material, provides the Global Recycled Standard (GRS) certificate, a standard for the traceability and verification of the content of recycled material in a product.

Benefits

- ✓ Reduces consumption of energy and resources associated with the manufacture of raw materials
- ✓ Provide a second life to the bottles and prevent their cremation

[+ INFO](#)



Partner

vertisol
contemporary weavers

KPIs

- ✓ Planet FR is made from **recovered PET bottles** (one square meter **equals 6 bottles**)
- ✓ Other characteristics of the tissue are:
One square meter is made from **4/6 thrown away bottles**, Significant level of acoustic absorption (Planet FR), that contribute to indoor **air quality**.

SDGs impact



The connected infrastructure solution

Improving waste management operations for a more sustainable world

The Challenge

- ✓ Allowing mining operators to manage their critical assets for more efficient and safer operations.

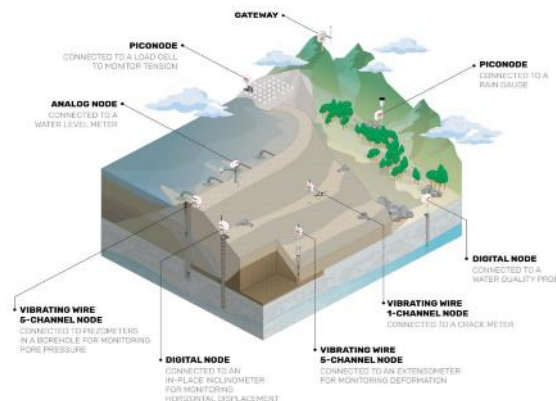
Innovation/Solution

Loadsensing is the global leader for connecting and wirelessly monitoring infrastructures in remote locations. Mining companies can now monitor waste and tailings facility with reliable data. Having access to this information and real-time insights enables operators to anticipate needs, manage their workforce, diminish risks, and contribute to the prevention of disasters.

Benefits

- ✓ Monitoring of remote location
- ✓ Wireless network management and operator capability
- ✓ Real-time insight regarding physical structure state
- ✓ Increase safety
- ✓ Optimize maintenance cycle

+ [INFO](#)



Partner



KPIs

- ✓ More than **1000 wireless networks** worldwide.
- ✓ Deployments in over **60 countries**.
- ✓ More than **170K sensors** connected.
- ✓ Provide services to more than **270 costumers**.
- ✓ Introduce **30% of cost and energy** saving.

SDGs impact



Deodorization of rigid plastic packaging waste to promote its recycling and reuse

The validation of a methodology based in stream stripping for plastic treatment to eliminate odours

The Challenge

- ✓ To validate the steam stripping deodorization technology to promote plastic recycling and reuse.

Innovation/Solution

Develop a new sustainable technology for deodorizing plastic packaging waste by steam stripping. **Improving current recycling processes**, obtaining as a product a **high quality plastic material** suitable for later recycling and reuse.

Benefits

- ✓ Minimize the industrial use of natural finite raw materials and increase the life cycle of the plastic waste produced.
- ✓ Increase the direct reuse of packaging waste (post-industrial and household post-consumer) by producing high quality recycled pellets.
- ✓ Obtain products with high added value and excellent characteristics for new industrial applications with low environmental impact.
- ✓ Reduce the environmental impact of the disposal of plastic waste in landfill.

[+ INFO](#)



Partner:

soriguè

Nordvert S.L.U

City: Barcelona

KPIs

- ✓ Reduce 20% of landfill disposal plastic waste.
- ✓ Competitive price of recycled pellets.
- ✓ Odour removal efficiencies from 70-95%.

SDGs impact



Recovery of organic matter from the mixed municipal solid waste

Analysis of the recovery potential and testing of the possible necessary pre-treatment process

Ways of Valorization of the Organic Matter (VALMOR)

The Challenge

- ✓ To be able to transform organic waste coming from municipal solid waste (grey bin) into usable resources by means of a reliable process.

Innovation/Solution

Analyse the properties of MOR (organic matter obtained from the mechanical separation of non-recyclable municipal solid waste) throughout the MBT treatment and analyze the technical viability as material recycling.

Benefits

- ✓ Determine the ideal mixture and origin of the waste for subsequent recovery
- ✓ Pre-treatment process for mixed urban waste prior to the industrial process of material recovery. This process is subject to a possible patent
- ✓ Feasibility of valorizing MOR, where metals are recovered and the organic fraction is recycle as a raw material for the manufacture of methanol or others.



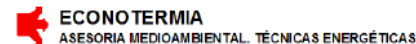
Partner:



+ [INFO](#)

City: Vacarisses,
Barcelona

Collaborators:



Chemistry, energy & water industries

KPIs

- ✓ CO₂-eq avoided emissions
- ✓ Avoid more than 90% of the MOR going to landfill
- ✓ Analysis of more than 10 variables of 4 different waste from the MBT during 1 year

SDGs impact



The research of a new glycol recovery process from used oil

Engineering of a conversion process of used mineral oil waste into value-added products

Chemical, energy and water industries

The Challenge

- ✓ To obtain a scientific and technical validation for the revaluation and use of the associated waste of purifying the **glycolated water** of Cator, S.A. and seeking for zero waste.

Innovation/Solution

In order to face the challenge, the glycol from **used oil** will be quantitatively analyzed. The **glycol** will be separated from the **glycolated water** and its commercial value will be studied. The by-product of the distillation of glycolated water will be used as an **additive in asphalt mixtures** and finally, the most suitable treatment of recovered water will be studied.

Benefits

- ✓ Implementation of an analytical method for the **quantification of glycols** from used oil.
- ✓ Treatment of recovered glycols to **obtain a product with commercial attributes**. (Application Sectors)
- ✓ **Define optimal conditions** to take advantage of heavy waste as an additive of Cator asphalt.
- ✓ Recovery of wastewater and reuse for industrial applications.



Partner: Cator, S.A.

Cator. + [INFO](#)

City: Alcover, Tarragona

KPIs

- ✓ 1.100 – 1.400 Tonnes/year of waste recycled
 - ✓ 55% water
 - ✓ 30 % glycol
 - ✓ 15% heavy waste
- ✓ 500 Tonnes of CO₂ emissions reduction.
- ✓ 650 Tonnes of H₂O recovered and reused in our industrial process.
- ✓ 300.000 liters of glycol reintroduced to market (anti-freezing agents, etc.)
- ✓ Low maintenance and operational costs as energy source is obtained from regeneration of used oil.

SDGs impact



Design of an innovative process to reuse glass contained in MSW (Municipal Solid Waste)

The Challenge

- ✓ To extend the life cycle of glass found in solid urban waste by introducing it to the recycled glass market.

Innovation/Solution

Design an innovative process which allows the reuse of 50% of the glass contained in municipal solid waste through an optimal combination of technologies. This way, it can be reintroduced into the market of recycled glass extending the life cycle of the material.

Benefits

- ✓ To reduce waste through the separation of 50% of the glass contained in residues from the energy recovery of MSW.
- ✓ To reduce glass in slag by 25%.
- ✓ Amount of stainless steel separated increased by 0,2%.
- ✓ Using waste as a resource.
- ✓ Soil protected improving slag quality used as backfill.



Partner: Reciclajes San Adrián SL



+ [INFO](#)

City: Sant Fost de Campsentelles, Barcelona

KPIs

- ✓ Separation of 50% of the glass contained in residues from the energy recovery of MSW; to be reintroduced into the glass market.
- ✓ To reduce glass in slag by 25%.
- ✓ Amount of stainless steel separated increased by 0,2%.
- ✓ Designed an industrial protocol in order to create a green label.

SDGs impact



Roadmap towards a ZLD approach: reuse of saline concentrate and permeate membrane flows in the leather manufacture

LIFE KIND-WATER-CYCLE

The Challenge

- ✓ Definition of a new concept adopting the principles of Circular Economy, by reusing the chlorides rich concentrate effluent from Reverse Osmosis in spite of the existing solutions based on evaporation, a high energy consumption route.

Innovation/Solution

To design, start-up, optimization, and validation of a prototype demonstration plant consisting of Nanofiltration (NF) and Reverse Osmosis (RO) membranes to reuse water and saline concentrate in the leather manufacture. The WTP known as IDR (Igualadina de Depuració i Recuperació) manages 500.000m³ per year of wastewater collected from 28 tanneries of the local leather cluster.

Benefits

- ✓ Removal of at least 98% of chromium content, 98% of COD value, 98% of chlorides and 97% of conductivity from WTP effluent in the permeate flow.



Partner:



+ [INFO](#)



City: Igualada

*Design Industries / Chemical, energy
& water industries*

KPIs

- ✓ Overall equipment effectiveness
- ✓ Process capability
- ✓ Quality improvement
- ✓ Reduction in penalties
- ✓ Waste ration reduction

SDGs impact



Converting organic waste into biomethane



LIFE Methamorphosis project

The Challenge

- ✓ To convert a municipal waste treatment plant and a commercial livestock farm into biorefineries that can produce automotive-grade biofuels from selected organic waste.

Innovation/Solution

Obtain biomethane that complies with quality standard UNE EN16723-2 from previously selected waste at the Ecoparc 2 plant in Barcelona and from animal slurry at a pig farm in Lleida, Catalonia. The compatibility of the biomethane with CNG engines was tested in SEAT vehicles during 120.000km of durability road tests.

Benefits

- ✓ Improve waste management by reducing energy consumption and producing biomethane as a vehicle fuel, mitigating climate change and promoting sustainable mobility.
- ✓ Biomethane has a lower greenhouse effect gas emission rate compared to other traditional fuels.
- ✓ Demonstrate a circular economy approach to the treatment of 2 types of waste products: municipal organic waste and agro-industrial waste.

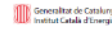
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Sustainable Mobility / Chemical, Energy & Water industries / Food Industries & Agriculture

PROJECT LOCATION



metha Partners
MORPHOSIS



KPIs

- ✓ Total annual natural gas consumption in Catalonia is **3,27 bcm***, of which **< 1%** is for vehicular use.
- ✓ Potential biomethane production from all recoverable organic residues in Catalonia is **0,438 bcm**, or **13%** of total annual consumption. Recovery and use of all accessible biomethane would enable a GHG emissions avoidance of **8.750 t CO₂ eq** per year.
- ✓ Biomethane enables an **80% reduction in CO₂ emissions** over the entire fuel life cycle compared with a petrol vehicle.

*bcm: billion cubic metres

SDGs impact



Recycling of rice waste for automobile industry

Use of Oryzite in parts of SEAT vehicles

The Challenge

- ✓ Study the use of renewable and sustainable material in the production of parts for the automotive industry.

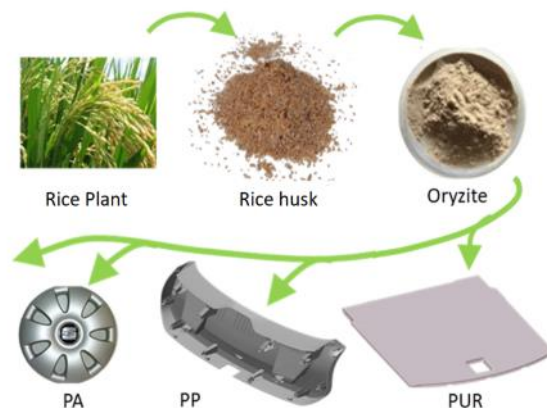
Innovation/Solution

The Montsià rice chamber developed a system to convert rice husk into a product called Oryzite, which is already implemented in different sectors of the industry. Now SEAT is researching the use of Oryzite as partial substitute for other plastic products.

Benefits

- ✓ Reduction of CO₂ emissions. More lightweight parts reduce fuel consumption and carbon footprint.
- ✓ Reduction of petroleum-based materials by biological origin materials.
- ✓ Reduction of environmental footprint and manufacturing costs, reducing energy consumption in manufacturing, by reducing injection time.

+ [INFO](#)



Partner



oryzite
a (re)defined material

KPIs

- ✓ More than **700 million tonnes** of rice is harvested worldwide every year. 20% of this is rice husks, **140 million tonnes** waste.
- ✓ Montsià Rice Chamber's production is **60.000 tonnes** a year. **12.000 tonnes** turned into Oryzite.

SDGs impact



Redefining the Work Wear industry dynamic

Introducing sustainability applying Circular economy principles

The Challenge

- ✓ Change the textile (work wear) paradigm: the 2nd most contaminant industry, that also generates big amount of waste plus social inequality.
- ✓ How to promote and boost corporate sustainability commitments trough facts that create value.

Innovation/Solution

Application of the Circular and Social impact principles in the workwear and textile merchandising design, production and manufacture.

Recycled, recyclable, social impact and zero waste garments.

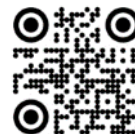
Benefits

- ✓ Environmental positive impact: waste reduction (plastic and textile), less CO2 emissions, less water and energy consumption...
- ✓ Social positive impact: (social inclusion and female empowerment)
- ✓ Employee engagement and corporate value culture promotion
- ✓ Value in image and reputation

+ [INFO](#)



Partner



City: Barcelona

Design Industries / Health, well-being & life sciences industries

KPIs

- ✓ More than 134.700 PET bottle waste avoided.
- ✓ Less CO2 emissions (-24% due to organic cotton, -75% due to recycled polyester)
- ✓ Less energy (-72% due to organic cotton, -70% due to recycled polyester) and water consumption (-91% due to organic cotton, -75% due to recycled polyester)
- ✓ Zero textile waste generated
- ✓ More than 30 women and families empowered

SDGs impact



Cyklos Circular Innovation

The Challenge

- ✓ Create systems for the optimal selection of waste, using incentives that place the consumer at the center of the beginning of the recycling process.
- ✓ Improve single-use packaging recycling results in Europe at affordable costs.

Innovation/Solution

Use Artificial Intelligence, the I.O.T. and Blockchain to connect industry and institutions with consumers in favor of recycling and the circular economy and responsible consumption.

Benefits

Promote recycling with incentives to:

- ✓ Increase recycling quotas
- ✓ Reduce waste, Co2 emissions and energy consumption
- ✓ Gain transparency and data traceability that allows a circular economy
- ✓ Production cost savings
- ✓ Cost savings for Municipalities

[+ INFO](#)



Partner:



City: Barcelona

KPIs / Benefits

- ✓ Improved **waste management**
- ✓ **Recycling alternative**
- ✓ **Industry FMCG** (Fast-moving consumer goods)

SDGs impact



Platform for the reuse of household product containers

Helping avoid FMCG (Fast Moving Costumer Goods) waste

The Challenge

- ✓ Break the FMCG practice of single-use and disposable containers with new products that can be recovered for reuse and subsequently reintroduced in the consumption phase.

Innovation/Solution

Smart reverse logistic systems and cleaning solutions that allow FMCG manufacturers to own, track and reuse the containers of the products that they sell and market.

Benefits

- ✓ Product positioning to enhance branding as sustainable and eco-conscious.
- ✓ Eliminate the extra tax burden effecting single use products.
- ✓ Provide retailers with sustainable commercial solutions.
- ✓ Any brand container is easy to return directly engaging consumers the sustainable process.

+ [INFO](#)



Partner



KPIs / Benefits

- ✓ **Waste reduction:** introduction of reusable containers in FMCG sector
- ✓ **Change in consumption habits:** from disposability to reusability
- ✓ **Centralized management** applicable to any brand that packages with reusable containers

SDGs impact



The Sustainability Platform transforming the fashion industry

Helping the transition of the textile sector to the circular economy

The Challenge

- ✓ To empower textile and apparel businesses in building responsible supply chains and ensuring transparency

Innovation/Solution

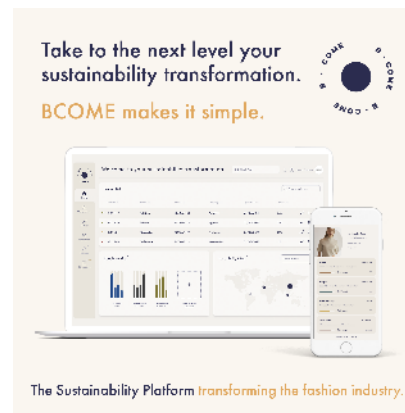
Platform for sustainability and innovation management in the textile and apparel industry.

Environmental impacts associated with each product are measured and indicated, by using 4 factors: water, carbon, eutrophication and waste. The index of sustainability of each product is evaluated, across four impact areas: planet, people, transparency and circularity.

Benefits

- ✓ Guarantee sustainable, transparent and honest products. Incorporate sustainability as a business driver for your brand.
- ✓ Accelerate textile companies' positive impact by improving their environmental responsibility.
- ✓ Get substantial cost savings and risk reduction in the whole textile value chain.

[+ INFO](#)



Partner



KPIs

- ✓ +1 million guaranteed product references active worldwide
- ✓ +5,000 products connected with conscious consumers
- ✓ +2,000,000 impact data shared between clients and consumers
- ✓ High quality data: +5000 sustainability datasets from internationally recognized LCA database
- ✓ ISO compliance and EU legislation
- ✓ Growth; increase the conversion rates of e-commerce up to 15%

SDGs impact



Honest brands marketplace

Marketplace platform for sustainable, local and green brands

The Challenge

- ✓ To develop a marketplace exclusively for honest brands, promoting sustainability and local brands.
- ✓ Create a community of honest brands.
- ✓ Contribute positively to the environment and society.

Innovation/Solution

This solution is aimed to develop a marketplace for honest brands, where all products have a social or environmental positive impact.

Groau's marketplace is especially created to assist local and emerging committed brands to be recognized and known.

Benefits

- ✓ To foster a sustainable shopping culture.
- ✓ To reduce the environmental impact of fashion industry and other design industries.
- ✓ Assist local businesses.
- ✓ Give visibility to sustainable brands that contribute positively to the environment.

[+ INFO](#)



Partner

groau
Honest Marketplace

KPIs

- ✓ Honest products
- ✓ Sustainable brands
- ✓ Local businesses
- ✓ Good for society
- ✓ Good for environment
- ✓ Emerging brands

SDGs impact



3. ENERGY

With the need to reduce atmospheric emissions becoming ever more urgent, there are two main goals to achieve: renewable and efficient energy system. Cities consume about 75 per cent of global primary energy and emit between 50 and 60 per cent of the world's total greenhouse gases. Therefore, reducing energy consumption and transitioning to green sources in cities is paramount, and will have a positive global impact.

Additionally, dependency from external energy sources is a resiliency challenge for urban areas, because a cut in energy supply or a spike in prices can cause big disruptions in the city.

For this reason, evolving to scenarios of energy self-sufficiency will provide cities with huge environmental, economic and public health benefits.

Smart Plant Manager for Utility Scale Photovoltaic Plants



Shift towards a circular economy for the housing sector



Green electricity from plants' photosynthesis



Life co2 to fuel



All in one electric vehicle charger



Electric motorcycle rental



Hydrogen-powered vehicle



Second Life of Electric Vehicle Batteries



Catalyst Development for Synthetic Natural Gas Production



Environmental Life Cycle Assessment of Li-Sulphur Batteries



Fast charging high performing battery solutions



Power battery pack



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Solar HUB**Evaporation solar System for treatment of manure****Photovoltaic panels that works with no sunlight****Models and techniques of data anonymization in the context of sustainable mobility****Batteryless and maintenance-free IoT solution powered by heat, wind or solar****Carsharing electric between citizens, companies and administrations**

Smart Plant Manager for Utility Scale Photovoltaic Plants

Store energy for higher functioning of PV plants

The Challenge

- ✓ Give more electric stability to renewable energy power plants through the development of effective power storage technologies.

Innovation/Solution

ÀLITER introduces in this proposal the STORM device: a Smart Plant Manager for Utility Scale PV Plants with Storage Systems. Storm, plus storage, gives a higher degree of flexibility and balance to the grid not only providing back-up power to the intermittence of the renewable sources but also complete ancillary services. All this factors combined together will ease the growth in penetration of PV and accelerate the decarbonization of the electrical system

Benefits

- ✓ Power stability and sustainable prices for the community.



Partner



KPIs

- ✓ More than **250** projects
- ✓ More than **3,2 GW PV** engineered
- ✓ **42 MW** of PV plants constructed
- ✓ **20 million** CO2 tons avoided
- ✓ **Clustering**: capability to group some small/medium PV plants and manage them as a large one.
- ✓ **Internet of electricity**: sharing grid information through a cloud server

SDGs impact



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Green electricity from plants' photosynthesis

Microbial fuel cells as an alternative energy source

The Challenge

- ✓ To develop an integrally unique way of generating electricity, from plants, without damaging them, with applications in numerous industries, at the moment focusing on agriculture replacing the use of chemical batteries in sensor powering.

Innovation/Solution

A small reactor based on microbial fuel cells applied to plant environments. Electricity is produced from the decomposition of organic substances obtained from living beings naturally found in the earth. This technology uses materials abundant on the planet, such as graphite, and which extraction is clean and provides water savings as compared to other types of energy sources.

Benefits

- ✓ The greenest electricity in the world
- ✓ Lower cost energy for localized applications



Partner



KPIs

- ✓ **2.5M €** in R&D grants (EU H2020)
- ✓ **50+ national & international awards**, including “The Most Innovative Company of the Year” by the European Parliament
- ✓ A target market of **2.1B+ €**

SDGs impact



[+ INFO](#)

Life co2 to fuel

CO2 cost-effective capture, hydrogenation and conversion to fuel in energy-intensive industries

The Challenge

- ✓ Capture CO2 and transform it into hydrocarbons.

Innovation/Solution

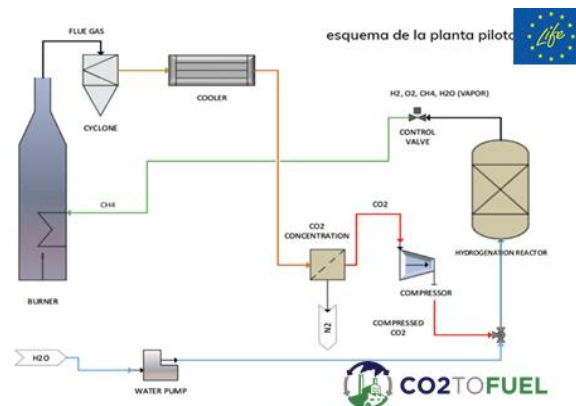
The solution proposed is an innovative technology comprising a thermochemical process under hydrothermal conditions. The process breaks the water molecule with the help of a catalyst releasing H* free radicals that quickly react with carbon compounds (CO2) to form new linear hydrocarbons (synthetic fuels).

The synthetic fuel formed is reinjected in the reheating furnace replacing the gas needed for combustion.

Benefits

- ✓ Reduction of CO2 emissions
- ✓ Reduction of fossil fuels consumed in the reheating furnace replaced by synthetic fuels

[+ INFO](#)



Partner



KPIs

- ✓ **800-ton CO2/year** captured and processed (avoided emissions)
- ✓ **496 Kg NO2/year** reduction emissions
- ✓ **6,472,000 kW/year** energy from renewable sources
- ✓ **5,996,000 kW/year** reduced energy consumption

SDGs impact



All in one electric vehicle charger

A solution where Fast and Low charging needs are linked

The Challenge

Provide an EV charging product range suitable for locations where several EVs need to be charged with different charging speeds. This platform must provide simultaneous DC and AC charging, must be able to escalate its fast charging power to meet with the higher battery capacity used in the brand new EV's, and must be able to increase the number of AC sockets (aside to the DC socket) to increase the number of sessions charging at once (to meet with the current EV uptake growth).

Innovation/Solution

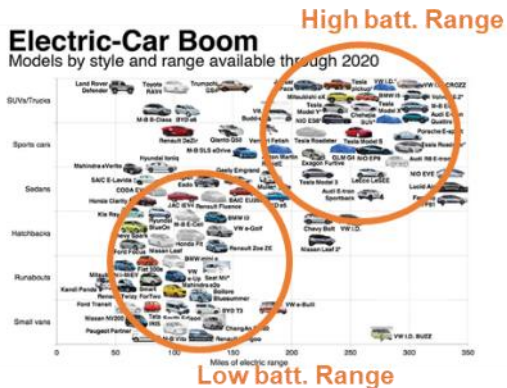
Design an Electric Vehicle Fast Charger using modular technology, ready to escalate its output from 50 kW to 100 kW, so even new EV's with higher battery capacity can reach at least 80% of total range in just 30min. Include a Slow charging output to be able to simultaneously charge fast and slow in a single product.

Implement a "Master/Slave" functionality assigning the fast charger as "Master" to control several "slave" products (slow AC chargers), which includes access control and dynamic energy balancing in remote. This configuration shall be scalable in order to increase the number of "slaves" charges as the EV uptake growth. DC available power must remain fix unless commanded remotely in order to keep a hierarchy of fast charging priority over slow charging.

Benefits

- ✓Mixing in a sole installation fast and slow chargers to adapt charging hubs in the most optimized manner.
- ✓Centralized user control access
- ✓Hardware scalability to be ready for the EV uptake
- ✓AC Dynamic Load Management to adapt power to demand
- ✓Simultaneous Fast Charing (DC) and Slow Charing (AC)

[+ INFO](#)



Partner



City: Viladecavalls (Terrassa)

KPIs

- ✓ This product range will represent a **substantial improvement in terms of boosting the EV uptake**, since improvements will be obtained focused on increasing the power as battery capacity does, and the number of slow chargers as EV uptake current growth does.

SDGs impact



Electric motorcycle rental

Electric motorcycles, a commitment to sustainable mobility

The Challenge

- ✓ To improve our environment and people's quality of life through more efficient and responsible mobility.

Innovation/Solution

Cooltra is the leading company in sustainable mobility solutions on two wheels in Europe. Born in Barcelona 16 years ago it is currently present in 6 European countries (Austria, Spain, France, Italy, Portugal and the Czech Republic), and has a workforce of close to 400 employees. Cooltra has a fleet of more than 18,000 vehicles, of which 65% are electric scooters that operate with a zero-emissions footprint. The company offers sharing services, such as the rental of scooters and electric bicycles by the minute, as well as renting services for both individuals and for companies and public administrations.

Benefits

- ✓ Promote sustainable mobility and decrease the use of private cars
- ✓ Environmentally friendly ecological vehicles.
- ✓ Consumption is minimal compared to refueling with fossil fuel

[+ INFO](#)



Partner



KPIs

- ✓ **20 cities** and **+100 rental points** around Europe
- ✓ **5,500 scooters rented** to companies in different sectors: food delivery, security, courier, AAPP (police and municipalities)
- ✓ **+1,5M users** in Cooltra motorsharing, the service that allows anyone over the age of 18 with a driving license to rent a scooter 100% electric through the Cooltra application. The vehicle can be rented by minute, by the hour or even by the day
- ✓ Saving more than **5,000 tons of CO2**

SDGs impact



Hydrogen-powered vehicle

Prototype vehicle that runs on hydrogen obtained from bio-renewable LNG

The Challenge

- ✓ Explore new alternatives to the use of fossil and renewables fuels in the automotive sector to decarbonise the surface transport

Innovation/Solution

Vehicle that incorporates technology to use Hydrogen obtained from a LNG to H2 reformed station. The station converts natural gas into hydrogen. In this way, the Co2 emissions can be reduced by 90% if all sources are bio in the vehicle. During the 2020, EVARM will present the final prototype and by the end of the year it plans to carry out the first tests in Catalonia. This project is also taking part of the research how to obtain liquefied natural biomethane that will be transformed into hydrogen from sustainable sources to provide H2 locally whenever needed.

Benefits

- ✓ Ultra low carbon emissions produced



Partner

EVARM



KPIs

- ✓ Reduce **90% Co2 emissions**

SDGs impact



+ [INFO](#)

Second Life of Electric Vehicle Batteries

An affordable and reliable alternative for stationary applications

The Challenge

- ✓ Respond to the increase in electricity consumption by the expansion of electric mobility.

Innovation/Solution

The electricity market considers energy storage systems a solution to face new challenges regarding the expected electricity consumption increase caused by, for instance, the electro-mobility expansion an uncontrolled production caused by the entrance of distributed electricity generation systems. The solution to re-use the electric vehicle battery in residential, tertiary, industrial and in any part of the electricity transmission and distribution network needs to find the technical capabilities, requirements, costs and benefits to estimate where is it more interesting to participate in.

Benefits

- ✓ It is a lower cost alternative



Partner



KPIs

- ✓ First demonstrator in Catalonia: **Sunbatt**
- ✓ **5 research projects** (two of them H2020) re-using or considering 2nd life of batteries.
- ✓ **Several private** partnerships

SDGs impact



[+ INFO](#)

Catalyst Development for Synthetic Natural Gas Production

The circular carbon dioxide economy is a field in constant growth

The Challenge

- ✓ Offering suitable catalysts for advanced methanation reactors. The innovation supports the valorization of carbon dioxide to renewable natural gas by increasing the efficiency of catalytic chemical reactors.

Innovation/Solution

The conversion of carbon dioxide into renewable natural gas allows: i) the chemical storage of renewable energies in which production cannot be adjusted to demand (wind, photovoltaic), ii) the contribution to a circular economy of CO₂ (CCU) with reduction of GHGs, and iii) less dependence on fossil fuel imports, specifically natural gas.

Benefits

- ✓ Development of advanced materials that meet the standards of novel methanation reactors.
- ✓ Production of synthetic natural gas of quality for use as vehicle fuel or for injection to the natural gas grid.
- ✓ Improved activity & selectivity

[+ INFO](#)



Partner



KPIs

- ✓ **60% of CO₂** avoided emissions
- ✓ Pilot to demo plant (**up to 5 kg batches**)
- ✓ Adapted to reactor design
- ✓ **40%** extended lifespan
- ✓ **4 times volume reduction vs. commercial reference:** For direct gas grid injection purposes, at 5 bar-g, the process worked successfully at 31,500 h-1 using CO₂ and 37,500 h-1 using biogas.

SDGs impact



Environmental Life Cycle Assessment of Li-Sulphur Batteries

High energy lithium Sulphur cells and batteries

The Challenge

- ✓ Lithium-ion batteries for electric vehicles (EVs) are thought to have achieved their theoretical specific energy, and thus alternative battery chemistries, such as Lithium-Sulphur (Li-S), are being researched to achieve higher values. Life Cycle Assessment (LCA) is used to compare the environmental impact of Li-S batteries with that of alternative batteries.

Innovation/Solution

Data collection for the composition and performance of a Li-S battery in an EV. Establishing an appropriate scaling method for data obtained from the laboratory production of coin cells to data estimations for the production of batteries.

Benefits

- ✓ Key outcomes include production of Li-S cells on a laboratory scale, testing the effect of the ageing of these cells under various conditions, and estimating their cycle life.



Partner



Shaping Energy for a Sustainable Future

KPIs

- ✓ The practical energy density (Wh/kg) of the Li-S battery is almost **higher 3 times** than the average of Lithium-ion batteries.
- ✓ Li-S batteries could **reduce the CO2 eq emissions around 20%** when compared with NMC Li-ion batteries
- ✓ Li-S batteries could achieve important benefits as decrease the use of mineral resources and human toxicity concerns in **70% and 85%** respectively

SDGs impact



[+ INFO](#)

CoSin (Combustibles Sintètics)

Renewable gas production through biogas upgrading and catalytic methanation

The Challenge

- ✓ Producing high-quality renewable gas generated from organic waste as an alternative to the standard production of electrical and thermal energy at WWTPs. This biomethane or synthetic gas is of sufficient quality for use as fuel for vehicles or for direct injection into the natural gas grid.

Innovation/Solution

An interesting, often undervalued renewable energy source is biogas generated by anaerobic digestion of organic waste, such as sewage sludge, agricultural or livestock waste. Biogas can be valorized by converting it to renewable gas of sufficient quality for use as fuel in vehicles or for injection into the natural gas grid. The production of biomethane represents a clear example of the circular economy, since it allows producing fuel from organic waste, such as wastewater treatment sludge. The process of converting biogas into renewable gas was optimized using membrane technology as well by chemical reaction with hydrogen. Biomethane allows the substitution of fossil natural gas at competitive prices.

Benefits

- ✓ Validation of membrane technology for biogas upgrading.
- ✓ Production of synthetic fuels from carbon of biogenic origin or by reusing carbon dioxide and/or water.
- ✓ Production of biomethane and synthetic natural gas of sufficient quality for use as vehicle fuel or for injection into the natural gas grid.

[+ INFO](#)



Partner



KPIs

- ✓ Use these synthetic fuels as large-scale energy storage that allows **increasing the share of non-fossil-source energies**.
- ✓ Development of a circular economy around **CO₂ emissions contributing to their effective reduction** through the use of a closed loop of carbon of biogenic origin allowing the **decarbonization of the natural gas grid**.
- ✓ Energy interconnection between the electricity and gas networks and promotion of new options and opportunities for the **development of new energy models**.
- ✓ Use of biomass and other sources of waste with organic content such as sewage sludge and/or slurry **contributing to environmental improvements**.

SDGs impact



Fast charging high performing battery solutions

For Light and Heavy-Duty Electric Vehicles

The Challenge

- ✓ Developing batteries that allows longer vehicle range, longer life and faster charge of electric vehicles.

Innovation/Solution

The project will develop higher energy density (leading to more range), an accurate battery state-of-charge (SoC) monitoring system (reducing range anxiety/enlarging the battery life), and lightweight construction (improving maneuverability/weight capacity). There is also an app for remote battery health monitoring, diagnostics and predictive maintenance. The batteries are designed for 2nd life applications and the use of an App for the remote battery health monitoring, diagnostics, & predictive maintenance, which is new in the HDEVs and LEVs application area, enhances market uptake.

Benefits

- ✓ Lower cost of batteries for users.
- ✓ Faster charge of electric vehicles



Partner

+MILLOR
www.millorbattery.com

KPIs

- ✓ The batteries will be on average **50% more durable**
- ✓ It will generate **129 million euros** accumulated income in 3 years
- ✓ Structure growth **from 17 to 84 employees after 3 years** of project completion

SDGs impact



+ [INFO](#)

Power battery pack

Autonomy and usability

The Challenge

- ✓ Offer a portable battery of sustainable energy and with multiple uses

Innovation/Solution

- ✓ The Li-Ion portable battery stores energy that can be used for many things, gives energy to your home (DC to AC converter for domestic use), work, camping, boat, motorcycle.
- ✓ It is charged with solar energy.
- ✓ Fully portable trolley type, which makes it fast and comfortable. Patent 2848456.
- ✓ It can be connected to the APP.
- ✓ Battery SWAP for companies.

Benefits

- ✓ Less environmental impact thanks to the use of sustainable energy
- ✓ EU Quality: Own development and assembly at Silence factory, Molins de Rei (Barcelona)



Partner



KPIs

- ✓ **15.385** scooters + battery packs sold since 2014
- ✓ **76.925.000 km** traveled
- ✓ **8.000 tons of CO2** avoided emissions *Gei calculation.
- ✓ **Catalan Industry 2** factories + R&D Center. 150 employees and more than 1.000 indirect jobs

SDGs impact



+ [INFO](#)

Solar HUB

A disruptive solar smart infrastructure enabling light & data as a service

The Challenge

- ✓ Cities commit to reduce their local emissions, but very few could monitor air quality precisely as the urban monitoring stations are costly and require high maintenance & installations expenses.

Innovation/Solution

Solar HUB is a compact environmental monitoring hub, fully powered by sunlight that integrates environmental sensors to measure PM2.5, PM10, CO, O3, NO2, SO2 & noise among other parameters. Its patented dome-shaped photovoltaic module, houses in a single element the sensors and devices. It also has LED modules and offers free light to everyone. It is connected to the Urban Brain, a digital interoperable platform that sends data of the sensors to the Cloud and let the users monitor remotely air pollution, get environmental reports, alerts & data analytics.

Benefits

- ✓ Real-time environmental data of the city.
- ✓ Information to take quick actions, improve environmental measures and benefit health. [+ INFO](#)



Partner

SOLAR HUB



KPIs

- ✓ **0.5 tons** of CO2 avoided emissions annually
- ✓ Increase **15%** the quantity of cities with less than **100.000** inhabitants that could measure main air pollutants to implement environmental policies
- ✓ **200k Wh** of clean energy to power sensors, IoT devices & recharging other devices

SDGs impact



Evaporation solar System for treatment of manure

Balance between pig hut and environmental sustainability

The Challenge

- ✓ Improve the price of treatments and the use of energies in the processes applied

Innovation/Solution

The general objective of this project is to investigate the confinement and control of slurry evaporation pools for solar thermal and photovoltaic supply, to reduce their volume while the emissions are controlled, and the use of surplus of the Photovoltaic production for self-consumption

Benefits

- ✓ The reduction of volume or drying total by solar evaporation of the purine in porcine farms where it is not possible.
- ✓ Lower the cost of transportation for processing plants or distant fields.



Partner



KPIs

- ✓ Treatment price of Puri to be carried at less than **6 euros/m3**
- ✓ The return on Investment of **less than 10 years**

SDGs impact



[+ INFO](#)

Photovoltaic panels that work without sunlight

The same protein that humans need to see in the darkness, used to generate electricity

The Challenge

- ✓ Promote renewable electricity
- ✓ Look for better solar panels performance

Innovation/Solution

Proton has been able to prove that there is a protein found at the bottom of the sea that generates electricity in the same way that the protein in human eyes captures the low light and transforms it into electrical impulses that reach our brain. This protein generates electricity, and thanks to this function, their smart panel do not stop working when there is no sun.

The idea is born from the question that if it was possible to separate the electrons from protons through a membrane that do not let the electrons pass, it could generate a potential differential and thus generate electricity.

Benefits

- ✓ Clean and circular economy
- ✓ Panels can be installed in the middle of urban areas and in shadowed spaces.

[+ INFO](#)



Partner



KPIs

- ✓ **100%** recyclable and **75%** reusable.
- ✓ **209,324** tonnes of CO₂ eq avoided
- ✓ **+25%** Energy efficiency of the buildings

SDGs impact



Shift towards a circular economy for the housing sector

Innovative circular solutions and services for new business opportunities

The Challenge

- ✓ Develop solutions to make resources more efficient during the life cycle of buildings.

Innovation/Solution

The project proposes an innovative paradigm shift towards a circular economy for the housing sector by demonstrating the feasibility of an integrated systemic service composed of 11 circular solutions co-created by stakeholders in current housing value chain. The HOUSEFUL Service will aim at the circular management and efficient use of water, waste, energy and material resources for all stages of European building's life-cycle. The results obtained will be used to define an integrated HOUSEFUL Service which will be driven and promoted through a SaaS (Software as a Service).

Benefits

- ✓ Reduction in the use of resources (materials, energy and water) in the housing sector



Partner



+ [INFO](#)

KPIs

- ✓ Recovery of **>95% of food waste** at home level.
- ✓ Recycling of **>90% of rainwater, greywater and blackwater** for production of reclaimed water and biogas.
- ✓ Production of high-quality biogas and efficient valorisation (**>90% conversion yield**)

SDGs impact



ANEM

Models and techniques of data anonymization in the context of sustainable mobility

The Challenge

- ✓ Data sharing between organizations in the mobility ecosystem (public and private) deals with some barriers as these organizations perceive some potential threats on this. Data sharing and analysis between different stakeholders in mobility ecosystem would allow particularly to improve organisations' internal processes and globally reach higher objectives in sustainable mobility.

Innovation/Solution

To achieve the above challenges data privacy has to be assured (both business and user data), a key point for stimulating data sharing. ANEM has the objective to develop a modular framework using last generation models and techniques that would generate high-quality synthetic data with differential privacy, also considering potential cybersecurity threats



Partner



City: Barcelona

+ [INFO](#)

Benefits

- ✓ Ensure data privacy by generating synthetic data
- ✓ Stimulate data sharing in the mobility ecosystem
- ✓ Scale-up to other sectors

SDGs impact



Batteryless and maintenance-free IoT solution powered by heat, wind or solar

The Challenge

- ✓ The digital transformation of the Industry 4.0 and smart cities with the least environmentally impact.

Innovation/Solution

Industry 4.0 and Smart cities need IoT devices to monitor parameters. These devices are commonly powered by batteries that require maintenance (battery replacement every 1-2 years) and have a very bad environmentally impact. Also, their batteries limit the wireless communication range, the data latency, data computation, are not suitable for explosive environments (ATEX) and heat intensity facilities (iron&steel, cement, etc). AEInnova presents Indu-eye the first cutting-edge IoT device fully powered by heat, wind or solar that is batteryless and maintenance-free. Communicate using LoRaWAN, NB-IOT or LTE-M, incorporate edge-computing and send data as demand. Data is presented in the AEInnova's cloud platform called DAEVIS, with powerful tools such as predictive maintenance.

Benefits

- ✓ This solution is 50% cheaper, has no maintenance costs and has 98% less environmental impact.

+ [INFO](#)



Partner



Chemical, Energy and Water Industries /
Industry 4.0 & Industrials Systems

KPIs

- ✓ **LoRaWan > 80%** compared to wireless solutions WirelessHart or ISA100
- ✓ **NB-IOT/LTE-M > 95%** compared to previous wireless solutions
- ✓ **> 200€ / yearly** in battery replacement + personnel costs + process stop
- ✓ **> 96% reduction in carbon emissions, water usage, heat and energy consumption**

SDGs impact



Electric carsharing for citizens, companies and administrations

More sustainable mobility

The Challenge

- ✓ Develop a technological tool to enable a more sustainable mobility

Innovation/Solution

The service consists of a rental service of electric cars (car-sharing). These cars can be either owned by the cooperative or by individuals, enterprises and public institutions (p2p). Vehicles can be used by means of accessing a digital platform (using an app) that allows users to make reservations, open and close the vehicles. In addition, the cooperative is working to incorporate new sustainable mobility services to the platform, such as bike-sharing or car-pooling and ride-sharing. And the future aim is to set on the autonomous vehicle as shared resource.

Benefits

- ✓ Minimize the negative impact of travel
- ✓ Reduce CO2 emissions with electric vehicles



Partner



KPIs

2500 cooperative members

1450 electric carsharing users

60 electric cars in service

263 tons of CO2 avoided emissions

SDGs impact



+ [INFO](#)

4. NEW MATERIALS

The circular economy pursues a harmonious intergrowth and sustainable development of both the economic and the social system without harming the natural ecosystem. By improving the productivity of materials and products (as shown in the graph below), not only the extraction of virgin resources but also the generation of waste can be reduced.

The new product design plays a key role for extending product life-span and closing material loops, as new design strategies are thought to address durability, maintenance and repairability, as well as upgradability or compatibility.



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Sustainable retanning agents



Sustainable fatliquoring agents



Sustainable unhairing with enzymes



Sustainable tanning process



5G network platforms and research for circular economy applications



Development of advanced functional absorbent products



Bioplastics for the industry growth



Biomass recovery



Reduction of the concentration of N-ammonia from livestock manure



New material formulated with electric-arc furnace



New Materials formulated from residues for the construction sector



Longer life for transparent organic PV cells



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Advanced photocatalytic textiles to mitigate air pollution in cities



Eco-friendly batteries for single-use applications



Sustainable plastic solutions



An environmentally friendly plastic solution



Manufacture of recycled high-quality yarns



Manufacture of recycled colored yarns



Innovating in Construction Market by Using Recyclable Materials



Reuse your jeans!



A bio-based recycle packaging



The Greenest Tissue paper in the world



Compostable coffee capsules



OIMO



4. NEW MATERIALS

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An ecological solar textile that purifies the air



Edible, flavored and 100% biodegradable straw



Generation of activated carbon from waste products



A more circular plastic packaging value chain



Sanitizing detergents based on biological ingredients



Ecoplanta: Green Chemical Industry



Organic waste transformation into bioplastics using bacteria



Sun protection, for curtains and blinds



Traceability system with blockchain technology for the circular economy



New decarburizing asphalt mixtures modified with recycled plastic polymers



Innovative technologies and new ways of recovering glass recycling waste



Use of by-products and recoverable residues from the paper industry in the asphalt industry



4. NEW MATERIALS

The circular economy pursues a harmonious intergrowth and sustainable development of both the economic and the social system without harming the natural ecosystem. By improving the productivity of materials and products (as shown in the graph below), not only the extraction of virgin resources but also the generation of waste can be reduced.

The new product design plays a key role for extending product life-span and closing material loops, as new design strategies are thought to address durability, maintenance and repairability, as well as upgradability or compatibility.

Bio-repaving of roadways



Recycling of Slurry into Fertilizers, Energy and Water



New sustainable polymer for the tanning industry



High-performance concrete from non-recyclable residues



Organic biolubricants for sustainable mobility



Reusing leftover sand from the foundry industry for the cores production



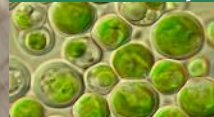
Natural Preservation Technology



ECO membrane production for sustainable water treatment



Biotechnology for circular economy



Research of new processes to valorize gravel sands



The obtention of nanocellulose from the primary sludge of the paper industry



Bio-repaving of roadways



100% compostable packaging for sweets



Sustainable paper paste mannequins



Substitution of halogenated flame retardants

FLAREX - Promotion of the circular economy in the technical textile sector

The Challenge

- ✓ Reduction of the environmental impact generated for textile finishing products flame retardants, through the study of non-toxic alternatives.

Innovation/Solution

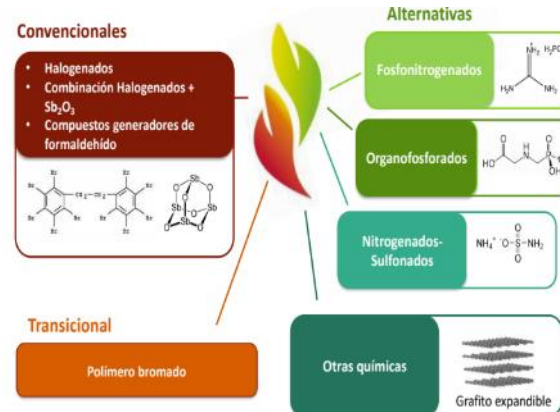
FR compounds are currently used in the textile industry and are persistent in the environment and toxic for health human, associated with release of furans and dioxins and carcinogens.

From Leitat and AEI Tèxtils, have discovered alternatives based on phosphonitrogen compounds and on sulfonated nitrogenous, viable for textile applications that do not require durability to washes. Considering the results of the LCA study, the proposed halogen-free alternatives have less impact compared to conventional products.

Benefits

- ✓ The proposed halogen-free alternatives have less impact compared to conventional products
- ✓ Reducing the use of substances of concern.
- ✓ Cleaner and more efficient production

[+ INFO](#)



Partner



Co-funded by:



KPIs

- ✓ Up to **60% impact reduction** can be achieved by substituting halogenated FRs
- ✓ **Alternative flame retardants match** the technical performance of conventional products with lower environmental impact.
- ✓ Alternatives can be **cheaper** than conventional products

SDGs impact



Substitution of fluorinated chemistries in water and oil repellent products

MIDWOR - Promotion of the circular economy in the technical textile sector

The Challenge

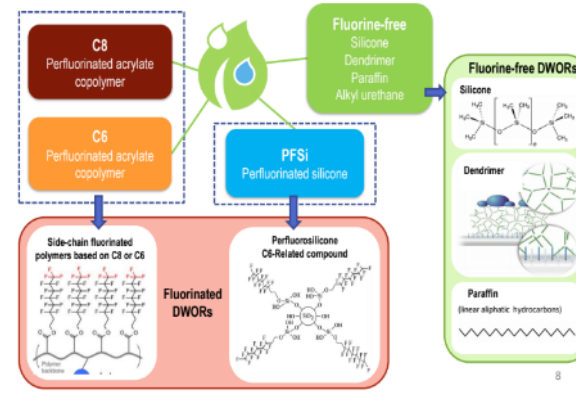
- ✓ Reduction of the environmental impact generated by repellent textile finishing products to water and oil, through the study of non-toxic alternatives..

Innovation/Solution

DWOR compounds are currently used in the textile industry to provide Durable oil and water repellent fabrics, which have a greater environmental impact than alternatives fluorine free. The impact of fluorine-free compounds is 30-50 times less. From AEI Tèxtils compounds are studied for applications where water repellency is required, found alternatives with good technical performance and less environmental impact. The best results have been obtained by the dendrimer. In the case of the compound you provide oil repellency, a fluorine-free one has not yet been found, but if perfluorosilicone was found to be the option with the lowest associated environmental impact.

Benefits

- ✓ According to the occupational risk analysis. the majority of alternatives are safer than con' [+ INFO](#) products.



Partner



Co-funded by:



KPIs

- ✓ Mon-fluorinated chemistries **can substitute** the fluorinated DWOR products for water repellency with similar performance than conventional products
- ✓ Non-fluorinated products have up to **10 times** lower environmental impact
- ✓ In terms of risk analysis environmental, most alternatives are **less dangerous** than Conventional C8 products, and C6 polymers are similar to C8.

SDGs impact



Continuous filament production of synthetic yarn

Use of post-industrial waste from the textile chain and material from PET packaging

The Challenge

- ✓ More sustainable yarn production.

Innovation/Solution

Compact production plant equipped with cutting-edge technological facilities that focuses on the production of synthetic yarn by extrusion and spinning of polymer pellets. With the goal of protecting our environment, in Antex we recycle our internal waste as well as waste generated in other stages of the textile chain. We also have a wide range of yarns based on recycled polymers obtained from the selective collection of packaging waste. We are also part of Seaqual Initiative, a collaborative community fighting plastic pollution.

The products can contain special additives such as antimicrobial, flame retardant, UV protection, IR absorption, thermo absorption, biodegradation,...

Benefits

- ✓ Reduce raw material consumption
- ✓ Reuse post-industrial waste material from the textile chain and packaging

+ [INFO](#)



Partner



KPIs

Reduction of:

- ✓ **36%** of CO2 emission (Global warming)
- ✓ **34%** of water consumption
- ✓ **39%** of energy demand

SDGs impact



Highly efficient catalysts for air filtration systems

Nanomaterials capable of removing toxic air contaminants at room temperature

The Challenge

- ✓ Eliminate carbon monoxide and volatile organic compounds of industrial and domestic indoor environments that can be harmful for human health.

Innovation/Solution

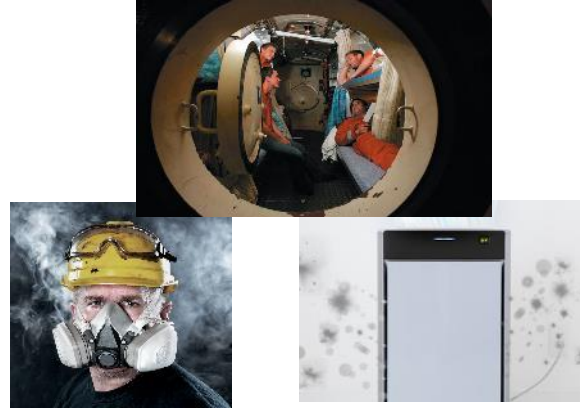
Astrea Materials is a company devoted to the development and supply of most novel and high efficiency products to safely abate CO (carbon monoxide) or VOCs (i.e. formaldehyde) in most demanding technical applications:

- ✓ Marine (O&G and professional diving)
- ✓ Mining and tunneling (refuge chambers)
- ✓ Industrial (i.e. fire fighting), gas and escape hoods
- ✓ Aerospace and Defense (life support systems and soldier protection)
- ✓ Domestic air filtration

Benefits

- ✓ Importantly, their technology does not produce noxious byproducts but converts those to carbon dioxide and water

[+INFO](#)



Partner



City Case: Sabadell (Barcelona)

KPIs

- ✓ Nanotechnology for **air purification**
- ✓ **Increased efficiency** compared to Pd/Pt and transition metal catalysts (Hopcalite and Carulite)

SDGs impact



Cleaning products in a tablet

A single-dose effervescent tablet in a reusable bottle

The Challenge

- ✓ Reduce the plastic waste and environmental impact by making efficient and sustainable cleaning products.

Innovation/Solution

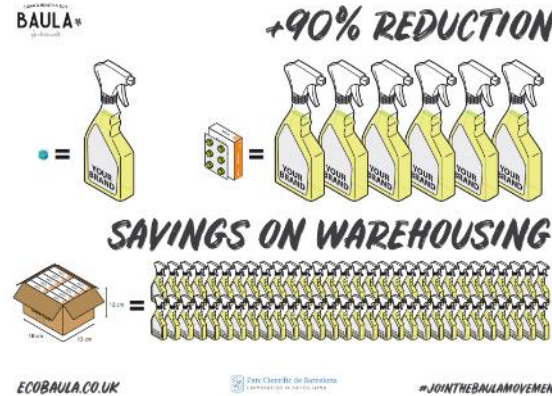
Worldwide patented research, based on manufacture and distribution of cleaning products in individual effervescent capsules.

Ecobaula is a single-dose effervescent compressed tablet made of natural ingredients, easy to use in an empty bottle, filling it up with water followed by inserting an effervescent tablet from the blister pack. After a few minutes, the tablet is fully dissolved, and the product is ready to be applied to any surface.

Benefits

- ✓ Plastic packaging reduction above 90%.
- ✓ 0% organic residue in its deterioration.
- ✓ Water soluble product.
- ✓ Storage space reduction, reduction in logistics distribution and reduction of energy consumption and CO₂ emissions

+ [INFO](#)



Partner

BAULA 
for a cleaner world

KPIs

- ✓ Up to **95% weight** reduction
- ✓ Up to **90%** reduction on **packaging materials**
- ✓ Reducing the **CO₂ emissions x8** (production and transportation)
- ✓ **Natural ingredients**

SDGs impact



Recycling carbon fiber composites

Production of advanced materials from composite waste

The Challenge

- ✓ Solve the global problem derived from the management of fiber reinforced plastic.

Innovation/Solution

Carbon fiber-reinforced plastics are widely used in several sectors and are considered one of the materials of the future. But at the end of their lifespan, composites are dumped in landfills causing a global problem. Through its own disruptive technology, BCIRCULAR obtains high quality carbon fiber from composite waste (airplanes, competition vehicles, wind blades, bicycles, etc.). Recycled fibers are used to produce new composites, reinforced pellets or 3D printed products.

Benefits

- ✓ Development of new advanced materials and high-performance sustainable products from recycled carbon fiber.
- ✓ Aimed at multiple sectors

[+INFO](#)



Partner

bcircular
sustainability & advanced materials

clustermoto
cluster para el avance de la tecnología de la moto



KPIs

- ✓ **100%** Clean and efficient technology
- ✓ **0% waste**
- ✓ Landfill volume reduction
- ✓ Carbon footprint reduction
- ✓ Conservation of **87-93%** quality of the recovered fibers (compared to original fibers)
- ✓ Recycled fiber **multiplies by 9 the strength** in thermoplastic products
- ✓ Recycled fiber **multiplies resistance by 3** in thermoplastic products

SDGs impact



Sustainable extraction of microalgae to develop skincare active ingredients

Natural origin, free of pollutants and zero waste

The Challenge

- ✓ Attain a sustainable extraction process for Omega3 and Astaxanthin for human use to incorporate into an eco-friendly skin delivery technology.

Innovation/Solution

The SME Bicosome has developed advanced skincare ingredients incorporating microalgae extract from a new eco-innovative and sustainable industrial bioprocess designed by Neoalgae Company. These microalgae are incorporated in lipid nanostructures, called bicosomes, which is 100% natural technology, produced in an ecological process that neither uses organic solvents nor produces toxic wastes and is a zero waste product.

Both microalgae extract and skincare ingredients are free of pollutants, without fishy aftertaste and odour free, apt for vegans, and with competitive and stable production costs.

Benefits

- ✓ A process that does not affect the environment and is sustainable in the long run.

+ [INFO](#)



Partner

bicosome®

KPIs

- ✓ New ecological products for the **treatment of skin diseases**.
- ✓ Both products will be **free of pollutants**, and with **competitive and stable production costs**

SDGs impact



Reuse of byproducts of the cork industry for cosmetics

Extraction of polyphenols from cork for cosmetic uses

The Challenge

- ✓ Extraction of polyphenols, antioxidant substances present in by-products of cork stopper fabrication, to incorporate them into creams and other beauty products with anti-aging properties within the circular economy concept.

Innovation/Solution

Pioneering project in Catalonia based on the extraction of polyphenols, antioxidant substances present in cork, to incorporate them into cosmetics and take advantage of their anti-aging properties.

The idea is to reuse by-products from the cork industry that until now were not considered of value, through a more sustainable extraction methodology since other similar studies used petroleum derivatives.

Benefits

- ✓ To reuse different elements of the cork industry, which currently have a very low value.
- ✓ Circular Economy that mitigates environmental impact and irreversible damage to climate and biodiversity and reduces greenhouse emissions. [+ INFO](#)



Partner



R+D partner



KPIs

- ✓ Cork extracts have **antioxidant** and **anti-aging** properties.
- ✓ Cork material is closely related to the maintenance of **biodiversity**, the heart of sustainable development, and the **reduction of emissions and sequestration of CO2** through the cork forest.
- ✓ Each cork stopper contributes to fix up to **562 g CO2**.

SDGs impact



Research and development of Innovative greases

Biodegradable, self-extinguishing and anti-vibration lubricating greases

The Challenge

- ✓ Create and develop more efficient and eco-friendly lubricants for railway lubrication processes.

Innovation/Solution

Brugarolas has developed lubricating greases based on high performance biodegradable esters that provide high added value properties such as: biodegradability, self-extinguishing and anti-vibratory properties that prevent soil contamination by migration of mineral oil based lubricating greases used previously, and generation of noise by friction. These greases have been validated in the railway sector, but they might open niches for markets such as foundries, hot mills, hot extruders, stained glass and cement plants due to their auto-extinguishing properties.

Benefits

- ✓ New lubricants has been proven to be more efficient than previous lubricants (less wear in the rail/wheel flange system), in addition to being eco-friendly and non flammable.

+ [INFO](#)



Partner



KPIs

- ✓ Only one Railway Company of a small Country like Catalonia throwed to the environment **10 tons of mineral** oil based lubricant per year, that remains in the soil for many years. With the developed biodegradable lubricating grease, it is degraded in few months.
- ✓ Reduction of the wear of the Wheel Flange leads to a savings of **15% of Wheel** consumption and decreases maintenance costs.

SDGs impact



Hygienic perfume based on biotechnological synthesis ingredients

Dual-purpose perfume with odor neutralizers and antimicrobial properties

The Challenge

- ✓ Develop a perfume for use in cleaning products, which is environmentally sustainable, antimicrobial and with perfume characteristics suitable for domestic and industrial use.

Innovation/Solution

The main objective of the project is to develop a perfume that has antimicrobial properties to be used in cleaning products. This perfume has a double functionality: one, optimal olfactory perception and second, to improve hygiene in industrial and domestic areas. The focus is to develop a perfume with antimicrobial properties, while taking account environmental and social aspects, applying green processes to obtain biodegradable active compounds.

Benefits

- ✓ More sustainable antimicrobial ingredients which are not harmful for humans in comparison to existing cleaning products.



Partner



KPIs

- ✓ **5%** reduction of organic content in waste water during the washing step
- ✓ **100%** bio-based functional ingredients
- ✓ **Cost effective**
- ✓ and high performance product.

SDGs impact



+ [INFO](#)

Technology to reduce printers' impact on the environment

Printer for the packaging sector

The Challenge

- ✓ Develop a technology with an innovative design and environmental benefits

Innovation/Solution

The Offset CI Evolution press is a solvent free technology that uses curing ElectronBeam (EB) inks and coatings, has no solvent emissions, consumes less ink, less energy and is capable of printing a wide range of substrates even the thinnest films.

Benefits

- ✓ No solvent emissions: avoids emissions of organic volatile compounds (VOC's)
- ✓ The printing process consumes less energy and less inks
- ✓ EB curing provides the best solution for recyclable packaging; when printing PE reverse the partial crosslink process will increase thermal resistance of the external packaging layer, when printing surface the coating EB will provide high surface protection.
- ✓ EB inks and coatings are highly resistant to chemicals, to sealing, to heating and to scratch, this provides a real solution to replace some complex lamination for a more recyclable and efficient solution by reducing the number of layers.

[+ INFO](#)



Partner



KPIs

- ✓ Consumes **40% less energy**
- ✓ Reduces the amount of **ink up to 0.9 g / m2**
- ✓ Economic activities related to the packaging sector represents in Catalonia **4% of GDP**, with about **€ 7.1 billion of turnover**

SDGs impact



Longer life for ballast in rail

Improving the properties of rail track ballast to reduce vibration and increase the lifespan

The Challenge

- ✓ Degradation of ballast aggregates which lead to a descent of track quality.

Innovation/Solution

Ballast is a crucial element of the track superstructure given that it fulfils key functional as drainage, load distribution or proving lateral resistant which govern the stability and performance of railway tracks. Due to the importance of the material Neoballast appears an innovative sustainable and cost-efficient solution to improve the economic and environmental performance of railway tracks.

This step forward is achieved through an advanced coating that comprises a bespoke binder component and recycled rubber coming from an of life vehicles tyres.

Benefits

- ✓ Increase the lifespan of ballast layer as well as the overall track service life.
- ✓ Allows the use of poor-quality aggregates which can compensate the lack of high-quality aggregates in certain regions.

[+ INFO](#)



Partner



City Case: Rail Track in Metro Barcelona

KPIs

Results of the technology

- ✓ Track stiffness reduced by 30%
- ✓ Vibration reduction by 10 dB
- ✓ Noise reduction by 0.6 dB
- ✓ Estimated ballast lifespan increase by 100%
- ✓ Reduction of LCC by 20%
- ✓ Reduction of carbon footprint by 30% (11.32 kg CO2 eq. per ton)
- ✓ Recycling of used tyres
- ✓ Potential recycling of existing ballast
- ✓ Enlarging of quarries' life
- ✓ Patented technology
- ✓ Certification on process

SDGs impact



Sustainable retanning agents

New eco-friendly retanning products

The Challenge

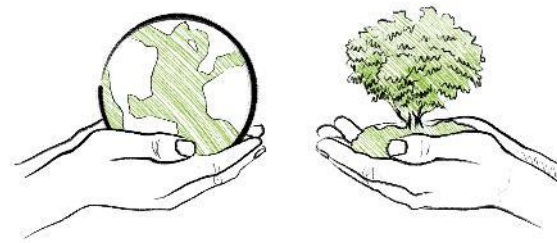
- ✓ Replacement of acrylic, sulfone and phenolic based retanning agents by renewable raw materials

Innovation/Solution

The majority of the retanning agents used in the leather industry com from the organic chemistry of petroleum, a nonrenewable resource and an important contributor to GHG.

Benefits

- ✓ New retanning products have same properties as the standard products, but they have higher biodegradability, they are originated from a renewable or residual raw material, they are environment, health-friendly and do not contain restricted substances.



Partner



+ [INFO](#)

KPIs

- ✓ **Biobased carbon** content has been analysed according to ASTM D6866-18, obtaining the following results:

RETANAL ST-AA	46%
RETANAL ST-AP	23%
RETANAL ST-A2P	50%
RETANAL ST-MS	75%
RETANAL ST-MP	74%

- ✓ **Low COD.**
- ✓ **Low or zero** formaldehyde content.

SDGs impact



Sustainable fatliquoring agents

New eco-friendly fatliquoring agents

The Challenge

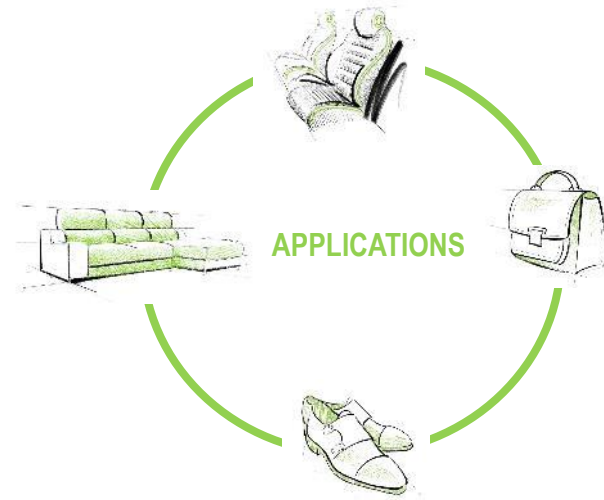
- ✓ Development of fatliquoring agents from renewable raw materials.

Innovation/Solution

Fatliquoring agents used in the leather industry are synthetic or natural origin. Even if they are of natural origin, it is not indicative that they come from renewable or residual raw material.

Benefits

- ✓ New fatliquoring products have same properties as the standard products but they have higher biodegradability, they originate from a renewable or residual raw material, they are environment, health-friendly and do not contain restricted substances.



Partner



KPIs

- ✓ **Biobased carbon** content has been analysed according to ASTM D6866-18, obtaining the following results:
RETANAL ST-AW 88%
RETANAL ST-AF 86%
- ✓ **Low COD.**
- ✓ **Low or zero** formaldehyde content.

SDGs impact



+ [INFO](#)

Sustainable unhairing with enzymes

Unhairing process eco-friendly

The Challenge

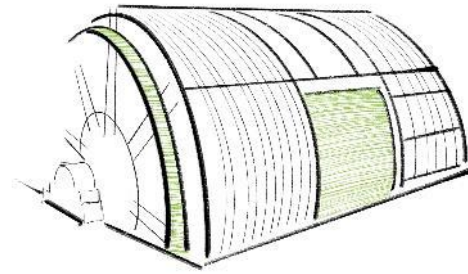
- ✓ Replacement of sodium sulfide as unhairing agent by enzyme based products.

Innovation/Solution

Unhairing is the most polluting stage of the tanning process, providing waste water with high BOD, COD, SS, sulfide, and TKN. Sodium sulfide is used as a standard unhairing agent, and this product can form hydrogen sulfide which is toxic, irritating and may cause death at very low concentration.

Benefits

- ✓ Cromogenia Units developed an enzyme-based process for unhairing with hair recovery using keratinase enzymes. This process allows reducing sodium sulfide and polluting loads.



Partner



+ [INFO](#)

KPIs

- ✓ **Reduction of polluting loads** when compared to standard process with sodium sulfide, obtaining the following results:

COD	-50%
BOD	-50%
SS	-70%
TKN	-50%
Sulfide	-50%

- ✓ **The risk of H₂S emissions is reduced.**
- ✓ **Less odor** in the plant.

SDGs impact



Sustainable tanning process

New process with a sulphonic acid derivative

The Challenge

- ✓ Tanning process with less salt and no sulfuric acid with a sulphonic acid derivative.

Innovation/Solution

The major polluting loads related to the tanning stage are chromium, chlorides and sulfates. During the tanning process, sulfuric acid is used to reduce sulfates from the residual bath. This product is extremely corrosive and hazardous during handling.

Benefits

- ✓ Cromogenia Units developed a new process with a sulphonic acid derivative which decreases the pollution load by reducing sodium chloride and chrome salts in the bath and eliminate sulfuric acid on account of its hazardousness during handling.



Partner



+ [INFO](#)

KPIs

- ✓ **Reduction of polluting loads** when compared to standard process, obtaining the following results:

Chloride	-68 %
Sulfates	-54 %
Chromium in bath	-60 %
- ✓ **Greater chromium oxide fixation** onto hide.
- ✓ **Lower collagen degradation**, thus providing a tighter, fuller leather with improved resistances.

SDGs impact



5G network platforms and research for circular economy applications

Innovate and create new markets

The Challenge

- ✓ To increase the energy efficiency of the ICT sector and vertical industries, resulting from the adoption of 5G technologies as well as research and innovation activities in communication networks.

Innovation/Solution

- ✓ A portfolio of experimental platforms (testbeds) made available to vertical industries for exploring the benefits of 5G and advanced communication technologies in terms of reduced energy consumption. It includes fully virtualized (NFV) 5G access and core network, a satellite segment for backhauling and massive coverage, and an Internet of Things (IoT) testbed allowing to collect, store, analyze and visualize in real time data collected by e.g., temperature, humidity CO2 sensors.
- ✓ Advanced AI/ML research activities to minimize the energy associated to communications and computation in radio access and edge computing.

Benefits

- ✓ Reduced energy consumption, enhanced [+ INFO](#) / management, improved air quality.



Partner



KPIs

- ✓ R&D center in Spain with the highest participation in **5G-PPP projects** (2nd in Europe)
- ✓ **+30 technology transfer contracts** with companies per year
- ✓ **CTTC** holds a TECNIO accreditation

SDGs impact



Development of advanced functional absorbent products

Pioneers in the production and development of organic cotton feminine hygiene

The Challenge

- ✓ To offer a healthier, organic and eco-friendly product range for Intimate Feminine Hygiene products

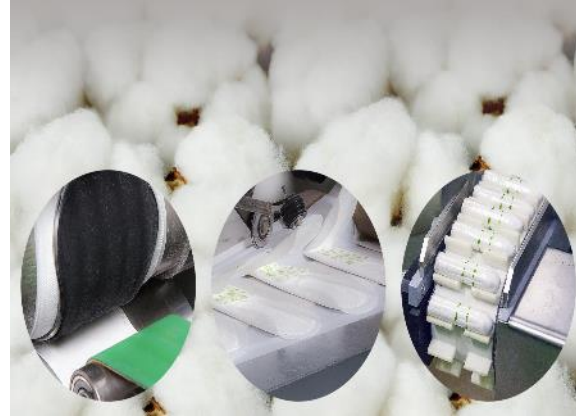
Innovation/Solution

Present a full range of Intimate Feminine Hygiene products (Tampons, Pads, Pantyliners and other related products) made with Certified Organic Cotton and Biodegradable materials which take care of Women Health and our Environment.

Benefits

- ✓ Hypoallergenic 'non-irritant' products, which helps to prevent the risks of itching, irritations and / or allergies.
- ✓ Environmentally friendly products made with certified organic cotton and the most biodegradable materials.
- ✓ Social responsibility policy. guarantee all workers rights and cooperate with ONG / social companies to help to get access to these products

[+ INFO](#)



Partner

COHITECH
Cotton High Tech S.L.



KPIs

- ✓ Currently present in more than **40 countries** all around the world.
- ✓ **76%** of the sales are outside Spain.
- ✓ **100%** Eco-friendly and Organic products.
- ✓ Sales increases 2019: **43%**

SDGs impact



Bioplastics for the industry growth

Valorization of organic waste to produce bioplastics for the cutting-edge technological

The Challenge

- ✓ Improve physical properties of bioplastics in the industry field.

Innovation/Solution

Dan*nas develops the Recovery of organic waste to develop functionalized bioplastics with high added value for the organic electronics, regenerative biomedicine or multifunctional packaging sectors. Controlling the degree of biodegradation in the medium or long term, its physical and mechanical properties. The development is 100% bio-based through the use of green chemistry.

Benefits

Improvements in

- ✓ Thermal or conductive properties.
- ✓ Strength, stiffness or flexibility.
- ✓ Fire retardant property.
- ✓ Hydrophobic or gas barrier properties.
- ✓ Ability to be transformed by injection, blown, extrusion or 3D Printing.

+ [INFO](#)



Partner

Dan*nas
artificial nature

KPIs

- ✓ Organic waste: Recovery of **70%** in a bioproduct.
- ✓ **80%** reduction in e-waste
- ✓ **82%** reduction in energy use in substitution of metal processing

SDGs impact



Biomass recovery

Transformation and use for new materials

The Challenge

- ✓ Transformation of by-products and wastes from various sources into added value products.

Innovation/Solution

With the main objective of making an integral use of biomass, new solutions and processes are developed and proposed by DBA:

- ✓ Valorisation of lignocellulosic biomass: separation of lignin, cellulose and hemicellulose using sustainable processes and environmentally friendly solvents.
- ✓ Recovery of biomass of greasy nature: Obtaining plastic precursors, lubricants, and also phase exchange materials (PCM) for energy storage.
- ✓ Recovery of biomass of protein nature: Obtaining culture media for the growth of microorganisms and plants.

Benefits

- ✓ Adding value to wastes from the agro-food industry
- ✓ Generation of commercial products
- ✓ Contribution to mitigate climate change

+ [INFO](#)



Partner



KPIs

- ✓ **Recirculation of feedstock** lost during the production (10%).
- ✓ **Less water and raw wood fibre** (up to 900Tm/year) consumed.
- ✓ Increased productivity.
- ✓ **Reduction in the CO₂** emissions (**180 ton/year**) due to less waste incineration.
- ✓ **Market value** (2020) of the obtained lignin: **800 k€**

SDGs impact



Reduction of the concentration of N-ammonia from livestock manure

New low-cost alternative process

The Challenge

- ✓ Reduction of the concentration of N-ammonia based on the needs and costs of treatment required

Innovation/Solution

A technology patented by the University of Barcelona (ES2332300B1 / WO2010 / 018260A1) has been developed for the use of low-content magnesium oxide by-products for the formulation of a reagent that is easy to handle and to add during the treatment of pig droppings in a physical-chemical source.

A demonstration installation of a pilot plan for the elimination of N-ammonia has been carried out, which allows determining the technical specifications at this scale of work.

Benefits

- ✓ Obtaining N-NH₃ slow release fertilizers.



KPIs

- ✓ **70-75%** reduction of N ammoniacal concentration
- ✓ **4-5€/m³**

Partner



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SDGs impact



New material formulated with electric-arc furnace dust (EAFD)

Developed with thermo-acoustic better properties for buildings

The Challenge

- ✓ Reduction of EAFD costs and develop a value added product

Innovation/Solution

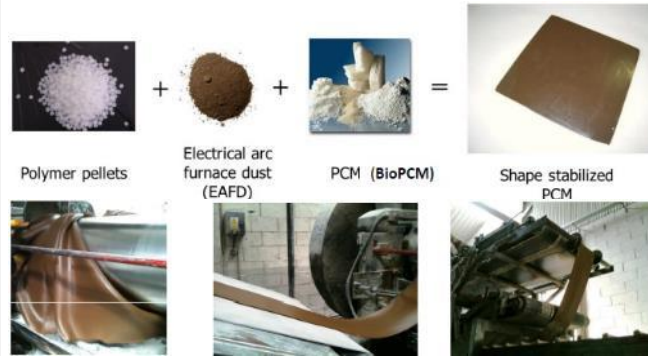
A technology patented by the University of Barcelona (ES2450765B1 / WO 2013/014318 A1) recycles EAFD into a shape stabilized acoustic insulation with thermal inertia provided by embedded phase change materials

(PCM). The material is non-hazardous, flexible, durable, highly dense, and offers compelling value for the product cost at the same time it solves the environmental challenges associated with treating EAFD. It is the first acoustic membrane in the world offering also thermal inertia with its high density and PCM (phase change material). The product helps (to reduce the energy consumption for cooling summer periods improving thermal and acoustic comfort.

Benefits

- ✓ Recycling steel making solid wastes for added value energy efficiency building products

+ [INFO](#)



Partner



KPIs

- ✓ Encapsulating **0.7 kg** of waste material, which up to 70% in mass would probably end landfilled
- ✓ Material of 5 mm thickness and mass per unit area **9.5 kg/m²**

SDGs impact



New materials formulated from residues for the construction sector

Sustainable construction materials

The Challenge

- ✓ Reuse different by-products to develop new materials for the construction sector

Innovation/Solution

Chemically bonded phosphate ceramics (CBPC)

- ✓ *Magnesium phosphate cements (MPC)*: repairing materials (cements, mortars), and for radioactive waste stabilization and solidification
- ✓ *Calcium phosphate cements (CPC) and Al/Fe/Zn phosphate cements*: application as dental cements and bioceramics.

Alkali Activated Cements (AAC) applications for construction materials (cements, mortars and concrete) and stabilization and immobilization of radioactive by-products.

- ✓ *Aggregates* made of MSWI bottom ash and air pollution control ash for road sub-base
- ✓ *Lightweight aggregates* from municipal solid waste and weathered bottom ash, for light cements application

Benefits

- ✓ Valorization residues and sustainable construction materials

+ [INFO](#)



Partner



KPIs

- ✓ Alternative Materials to OPC reducing **40% CO2**
- ✓ **CBPC rapid setting and durability**
- ✓ **CBPC** is a non temperature require setting
- ✓ **The AACs** involves energy and resources-savings
- ✓ **AACs** are sustainable cements following the zero waste principle

SDGs impact



Longer life for transparent organic PV cells

New material that adds value to PV cells

The Challenge

- ✓ Protect photovoltaic cells and extend their useful life.

Innovation/Solution

The aim of the project is to research on advanced nanostructured polymeric materials that act as a protective barrier for organic photovoltaic cells to extend their useful life. The expected results would include the development of a polymeric material that acts as a barrier to different types of gases and environmental vapors in organic photovoltaic cells, extending their service life. While in the other hand obtaining a material that does not degrade organic PV cells, either physically or chemically, during their deposition process.

Benefits

- ✓ Economically viable material that adds value to organic PV modules and facilitates their commercialization.



Partner



KPIs

- ✓ Two-component solvent based polyurethane preparation designed to obtain **great barrier properties against moisture and oxygen in environments with high relative humidity.**

SDGs impact



+ [INFO](#)

Advanced photocatalytic textiles to mitigate air pollution in cities

Innovative textiles that capture pollutants to improve air quality

The Challenge

- ✓ Capture pollutants in the air to improve air quality in congested cities.

Innovation/Solution

ETISILK has developed an innovative textile fabric coated with a nano-photocatalysts that can mitigate urban pollution. The treated fabrics can degrade air pollutants like NOx, organic fractions in the suspended particles (PM10 and PM2.5) and other volatile organic compounds (VOCs) into harmless substances. CLEAN-Photo-TEX This maintenance-free and low-cost solution is a complete game-changer to reduce air pollution in cities and improve the quality of life of humanity. ETISILK advanced textiles with photocatalytic technology can be used for architecture and decoration in cities merging both design and sustainability thanks to its double functionality as an air cleaning solution.

Benefits

- ✓ Reduce pollution in cities with a cost efficient, maintenance free and design friendly solution.

[+ INFO](#)



Partner



KPIs

- ✓ Clean tech and environment protection are international focus. The **EU has budgeted over 300 billion € for the next financial period.**
- ✓ **Addressable market** for CLEAN-Photo-TEX is of at **least of 3 billion €/year** for new buildings plus the potential for refurbishing existing buildings with textile panels

SDGs impact



Eco-friendly batteries for single-use applications

Batteries made of paper, carbon and small quantities of non-toxic metals

The Challenge

- ✓ Develop a technology to make batteries more sustainable and friendly with the environment.

Innovation/Solution

Eco-friendly paper-based battery technology to power portable electronic devices. Fuelium technology offers a sustainable alternative to pollutant coin cell and printed batteries, standard energy sources that require long and complex recycling processes. Fuelium batteries can be made in a tailor-made basis since specifications (such as voltage, power, size and duration) are scalable to the specific energy requirements of each application.

Benefits

- ✓ Affordable, eco-friendly and powerful batteries for single-use electronic devices.
- ✓ Sustainable power source.



Partner



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KPIs

- ✓ Particularly suitable to **power in-vitro diagnostics applications**
- ✓ **Easily integrable** into devices improving user experience
- ✓ **Reduce manufacturing costs** on devices
- ✓ **Voltage 1-6 V / Power 1-250 mW / Power delivery > 1 h**

SDGs impact



Sustainable plastic solutions

High quality recycled polyolefins as a sustainable solution to replace virgin polymer

The Challenge

- ✓ To design, produce and commercialize innovative and environmentally friendly recycled compounds, suitable for high end and demanding applications traditionally fed by virgin polymers.

Innovation/Solution

GCR Group's CICLIC is a leading brand in the production of mechanically recycled PP and PE compounds.

In-house optimization and development of recycling technology.

Cutting edge production and laboratory equipment combined with quality control management and assurance.

Benefits

- ✓ LCA performed on all recycled products with certified CO2 emissions reduction.
- ✓ Certification on origin and traceability of Post-Consumer (PCR) and Post-Industrial (PIR) raw materials

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Partner



City Case: La Bisbal del Penedès

KPIs

- ✓ **CICLIC** recycled production capacity of **50,000 mT/year**.
- ✓ **GCR Group's** overall capacity to reach **500,000 mT/year** by 2021.
- ✓ **90% of CO2 emissions savings** as compared to equivalent virgin polymer.
- ✓ In 2020 we will **prevent 36,500 mT of CO2** from being emitted into the atmosphere.

SDGs impact



An environmentally friendly plastic solution

Carbon footprint reduction

The Challenge

- ✓ Reduce heavy metals, non-abrasive plastic and suitable for a range of uses, including those coming food.

Innovation/Solution

Granic is leading brand of mineral plastic concentrates with calcium carbonate, talc, silicon derivatives and other mineral specialties for the processing industry.

Granic masterbatches are compatible with all kinds of great consumption polymers such as polyethylene (PE), polypropylene (PP), polystyrene (PS) and ABS.

Benefits

- ✓ Improving the Life-cycle assessment by using more environmentally friendly raw materials
- ✓ Reduction of energy consumption during the production process
- ✓ Reduction of clients' energy consumption due to its thermal conductivity decrease the need for energy consume.

[+ INFO](#)



Partner



City Case: Cerdanyola del Vallés

KPIs

- ✓ Production of 275,000 Tn/year

SDGs impact



Manufacture of recycled high-quality yarns

Sustainable and innovative

The Challenge

- ✓ Cover the growing demand for socially and environmentally responsible products

Innovation/Solution

This business project and its own business model is developed with the aim of creating value in a sustainable way for society, consumers, and customers. Produce yarns by recycling and using recycled textiles from other production centers: spinning mills, fiber manufacturers, weavers, clothing manufacturers, recycling plants. The destination of the different recycled yarns is the manufacture of recycled fabrics for clothing, decoration, technical, industrial and personal protection. The company has opted for the GRS certificate, under the supervision of Textile Industry Research Association, AITEX.

Benefits

- ✓ Less impact on ecosystems and their natural resources.
- ✓ Savings in the production of raw materials and in their dyed, water and energy.

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Partner



KPIs

- ✓ Savings in drinking water, **95% with recycled fibers**
- ✓ Less impact on ecosystems, **90% CO2**
- ✓ **Studies reveal: 89% of consumers** plan to buy more organic products in the next 12 months **and 35%** would be willing to pay more for an organic product.

SDGs impact



Manufacture of recycled colored yarns

Innovation applied to the manufacture of ecological yarn with various features and finishing qualities.

The Challenge

- ✓ Incorporate technology into the production of recycled yarn to achieve high-quality products.

Innovation/Solution

YES® was born with the desire to be a leader in the production of recycled colored yarns. HILOSA has created an exclusive ecological and sustainable manufacturing process that provides its products with a great variety and high performance.

They work based on a system devised exclusively in their color laboratory, achieving surprising, unique, exclusive results created on demand, based on concepts of sustainability and environmental respect

Benefits

- ✓ So ecological and sustainable manufacturing.
- ✓ Greatly reduce water and energy consumption in the fashion industry.
- ✓ Reduce the volume of solid waste in landfills.
- ✓ Save virgin raw material.

[+ INFO](#)



Partner

HILOSA®
HILADOS OLOTENSES, S.A.

KPIs

- ✓ **Less 55%** water consumption compared to conventional Cotton.
- ✓ **Less 62%** energy consumption than conventional Cotton.
- ✓ **Less 35%** in Greenhouse gas and CO2 emissions.
- ✓ **16%** insecticides and **7%** pesticides are used in conventional Cotton.

SDGs impact



Innovating in construction market by using recyclable materials

High-end reclaimed material for circular living, all made from cellulose waste

The Challenge

- ✓ Upcycle cellulose waste generated by the Paper Mills

Innovation/Solution

MDF and drywall are widely used by the construction industry. Both are made from virgin raw materials and are currently unrecyclable. We have developed a healthy and functional material called Honext boards, that can be used as a direct substitute for MDF and drywall. Honext is made from cellulosic waste generated by the paper industry that would otherwise be sent to landfill or burnt. Our growth strategy is based on collaborating with local industrials who have a waste problem to transform it into a material for the regional market, thus reducing the environmental impact of transportation.

Benefits

- ✓ Healthy material (recyclable, no VOCs emissions)
- ✓ Competitive price and technical properties: water resistant, fire reaction and sound absorption.
- ✓ Same transformation methods

+ [INFO](#)



Partner

HONEXT

KPIs

- ✓ **100%** of the production energy from renewable sources.
- ✓ **Closed process water loop.**
- ✓ **2020 goal: 2.000 tons** of waste transformed.
2025 goal: transform **72.000 tons** of waste per year.

SDGs impact



Reuse your jeans!

Repair your jeans and find out the new eco-designed products

The Challenge

- ✓ Reduce clothes consumption
- ✓ Reuse discarded jeans for new fashion products

Innovation/Solution

InfiniDenim has developed a circular economy around unwanted jeans and according to ethic, social and sustainable production. Their main actions include:

- ✓ Repair and collect jeans at the end of their product life in exchange for a shopping discount
- ✓ Re-manufacture of jeans in new eco-designed and quality products
- ✓ Local textile recycling of denim scraps, but making these part of new yarns and fabrics and at new fashion collection.

Benefits

- ✓ Facilitate citizens and companies on the transition towards a circular economy by offering them new eco-designed products with reused materials.

[+ INFO](#)



Partner

infiniDenim

KPIs

- ✓ **20.000 kg** de texans recuperats.
- ✓ **4.800 kg** de texans convertits en productes upcycling
- ✓ **1.200 kg** de texà convertits en nou teixit. Producció de 4000 m de teixit InfiniDenim.
- ✓ **36.691.200,00 litres** d'aigua
- ✓ **37.895.040,00 kg** de CO2

SDGs impact



A bio-based recyclable packaging

Milk protein and potato waste to replace plastic packaging

The Challenge

- ✓ Reduce reliance on fossil fuels for food packaging

Innovation/Solution

Paper and cardboard are preferred packaging options for many types of food, including milk. To obtain the desired properties, the packaging has to be coated with polyethylene which is synthesized from crude oil that negatively impacts the recyclability. The Bioboard project has developed a packaging material made from whey protein and potato waste. An environmentally friendly solution with affordable production costs, as well as maintaining the quality of the packed product. At the same time, it contributes to reuse the tonnes of whey that are annually rejected by the agro-food industry.

Benefits

- ✓ Reuse of the massive amount of whey available
- ✓ A more environmentally friendly and recyclable packaging.

[+ INFO](#)



Partner



KPIs

- ✓ About **7 million tons of coated paper, paperboard, and carboard** are currently manufactured
- ✓ Related job creation on average capital intensity in the industrial sector of € 120,000 per job per annum.
- ✓ **20millions tons of whey** are generated by the agroindustry

SDGs impact



The greenest tissue paper in the world

The OnePly paper technology allows up to 80% reduction in energy consumption

The Challenge

- ✓ Embrace sustainability in the tissue industry, developing technology to better use resources and maintain a high-quality product.

Innovation/Solution

Traditionally, tissue paper (for toilet rolls and hand towels) has multiple layers that are joined after drying each of them. This has a high energy consumption as there are 4 surfaces to dry. LC Paper developed a technology called OnePly that joins two layers in wet conditions, so the surfaces to dry are reduced from 4 to 2, thus using 80% less energy. The reduction in energy consumption allows 100% renewable sourcing that wouldn't be possible otherwise.

Benefits

- ✓ Reduced consumption of raw material, energy and water in the production process.
- ✓ Resulting product is more compact: more meters in the same roll diameter, so it uses less shipping space

+ [INFO](#)



Partner



KPIs

- ✓ The OnePly technology **costs 30% less than conventional tissue**
- ✓ **80% less energy consumption** in the production
- ✓ **2,56x less water used** in the production

SDGs impact



Compostable Coffee Capsules

Compatible with Nespresso coffee machines

The Challenge

- ✓ Develop daily use products to be eco-friendly and environmentally sustainable.

Innovation/Solution

Coffee capsules are one of the great releases of recent times, and their use continues to rise. However, this new product has also led to an increase in waste produced by coffee consumption. Until now there was no solution for these capsules, beyond the recycling offered by some brands. Cafés Novell has found a solution: after investing one million euros for its development, it launched the first compostable coffee capsules compatible with Nespresso coffee machines

Benefits

- ✓ Zero waste produced utilizing Novell coffee capsules, by composting them after using.
- ✓ Compatible with Nespresso machines, the most widespread capsule model.

+ [INFO](#)



Partner

NOVELL

KPIs

- ✓ **Full degradation** over a period of **12 to 20 weeks**
- ✓ **Certified organic coffee** in each compostable capsule

SDGs impact



Oimo

Packaging Nature Can Handle

The Challenge

- ✓ To tackle the 8 million tonnes of plastic which end up in the oceans every year we found a material alternative for plastic in packaging.

Innovation/Solution

- ✓ Marine biodegradable
- ✓ Water Soluble
- ✓ No need to be Industrially Composted

Benefits

- ✓ Microplastics Free
- ✓ Competitive price
- ✓ Pellet compatible with current plastic processing machinery



Partner



[+ INFO](#)

KPIs

- ✓ Food and beverage
- ✓ Cosmetics
- ✓ Electro domestics

SDGs impact



An ecological solar textile that purifies the air

First fabric that cleans and purifies the air by means of photocatalysis

The Challenge

- ✓ Eliminate toxic particles in suspension purifying the air.

Innovation/Solution

Through solar action, toxic particles in suspension, such as dust, smoke, mold or nitrogen dioxide are eliminated. It is estimated that 4m2 of this type of fabric is equivalent to removing a car that has been travelling for a whole year. The fabrics are sprayed with a mineral preparation based on titanium dioxide capable of removing dirt and toxic particles in suspension through the use of sunlight, like photosynthesis. The fabric eliminates common pollutants in the atmosphere through an oxidation process activated by sunlight, and it is carried out continuously, staying cleaner with half of the maintenance of a normal one.

Benefits

- ✓ Improve people's air quality through air purification.

[+ INFO](#)



Partner



KPIs

- ✓ 4m2 of fabric is equivalent to **removing a car travelling for a year**
- ✓ Through the use of sunlight, **the textile acts like photosynthesis**
- ✓ Self-cleaning effect around **70%**
- ✓ Reduction of molds by **60%**

* This data is indicative and may vary depending on the environment conditions.

SDGs impact



Edible, flavored and 100% biodegradable straw

Using and innovative complex production process first in class

The Challenge

- ✓ Reducing the amount of single use plastic

Innovation/Solution

SORBO MJV SL has developed a unique biodegradable, edible and flavored straw to fight single use plastic and especially plastic straws that generates huge pollutions in the oceans and on land around the world. SORBOS sustainable straws do not modify the taste or color of the drink. SORBOS straws are an added value for the customers and gives them a unique experience.

Benefits

- ✓ SORBOS is 100% biodegradable.
- ✓ SORBOS is edible and flavored
- ✓ SORBOS is an added value and unique experience for the customers



Partner

SORBOS®
edible straws

+ [INFO](#)

KPIs

- ✓ The first and unique edible, flavored and **100% biodegradable** straw in the world.
- ✓ More than **40 millions** of plastic straws reduced.
- ✓ More than **30 countries** in the world follows us in the fight against single use plastics.
- ✓ **800 tones** of plastic less in our oceans
- ✓ **10 awards** as an innovative and eco-friendly product.

SDGs impact



Generation of activated carbon from waste products

Use in adsorbent filters in the treatment of water and gas

The Challenge

- ✓ To obtain an adsorbent material from different wastes for water or gas treatment in a sustainable and eco-friendly manner.

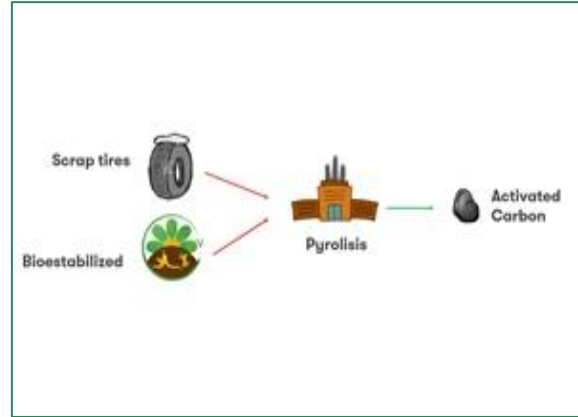
Innovation/Solution

Sorigué, through its project called ResActiv, developed a technology that transforms scrap tires and bio stabilized material (not studied with new technologies so far) into a new activated carbon filter (AC) that can adsorb bad smells, heavy metals, organic matter and emerging pollutants in water and gas treatment.

Benefits

- ✓ Usage of a waste product to produce an added value material (Carbon filters)
- ✓ Produce a high value-added product that also contributes to circularity. Is generated for water management, thus closing the cycle of materials
- ✓ Way out of the landfill for pneumatic/bioestabilized waste until now could not be valued materially or energy

+ [INFO](#)



Partner

sorigué

KPIs

- ✓ Scrap tires and bioestabilized transformed into an add value AC **with a high specific surface > 500 m2/g**
- ✓ Price of AC can achieve up to **2,000€ per ton.**
- ✓ **40,000 tons of scrap tires and 288,500 tons** of bio stabilized per year will avoid to landfills, only in Catalonia.

SDGs impact



A more circular plastic packaging value chain

Sustainable, efficient, competitive, less fossil fuel dependent and interconnected value chain

The Challenge

- ✓ Develop a plastic packaging that is more sustainable and eco-friendlier, while maintaining its cost-efficiency.

Innovation/Solution

The CIRC-PACK project will develop three case to develop, and test better system-wide economic and environmental outcomes by i) decoupling the chain from fossil feedstocks, (ii) reducing the negative environmental impact of plastic packaging; and (iii) creating an effective after-use plastics economy. All in all, the work will be supported by non-technological analysis and advanced methodological analysis which will trigger a broadly deployment of the tested solutions.

Benefits

- ✓ Improve sustainability of the packaging value chain
- ✓ Development of breakthrough biodegradable plastics using alternative biobased raw materials

[+ INFO](#)



Partner



KPIs

- ✓ A common EU target for recycling **65%** of municipal waste and **75%** of packaging waste **by 2030**
- ✓ A binding landfill target to reduce landfills to a maximum of **10%** of municipal waste **by 2030**
- ✓ Increase in recovery rate to **48%** **by 2020** and reduction of landfill rate by up to **15%** **by 2020**

SDGs impact



Sanitizing detergents based on biological ingredients

A positive environmental impact

The Challenge

- ✓ Maintain the hygienic properties of detergents while having a low environmental impact

Innovation/Solution

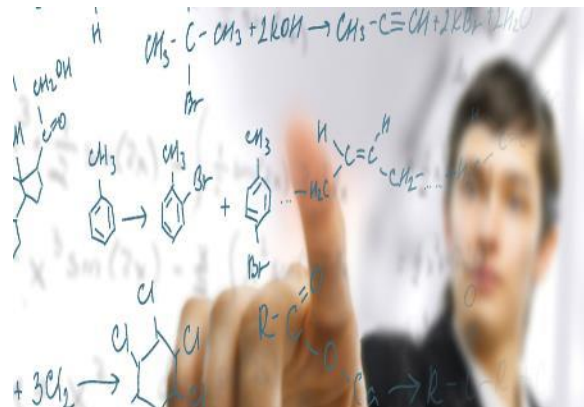
Increasingly focused on generating less environmental damage and being more sustainable, washing habits are changing worldwide: low-temperature washing, liquid products, neutral detergents as substitutes for alkaline and oxidizing components, short washing cycles.

The purpose of the HYGIENZYM project is to develop ecological enzyme-based detergents, with dual detergent and sanitizing functionality, without the need to resort to biocidal assets that pose a risk to users and the environment.

Benefits

- ✓ Quality product with low environmental impact
- ✓ With wooden pallets (PEFC-certified) and new boxes (FSC-certified), new and more sustainable materials were introduced into the company's storage and production process.

+ [INFO](#)



Partner



KPIs

PROQUIMIA has carried out a reconditioning of containers in 2019 which saved the following:

- ✓ **36.7 tons** of steel
- ✓ **14.1 tons** of plastic
- ✓ **-00.6 tons** of CO₂ emissions

SDGs impact



Ecoplanta: Green Chemical Industry

Innovative clean technology for a responsible and sustainable production

The Challenge

- ✓ Ecoplanta produces green methanol without using hydrocarbons.

Innovation/Solution

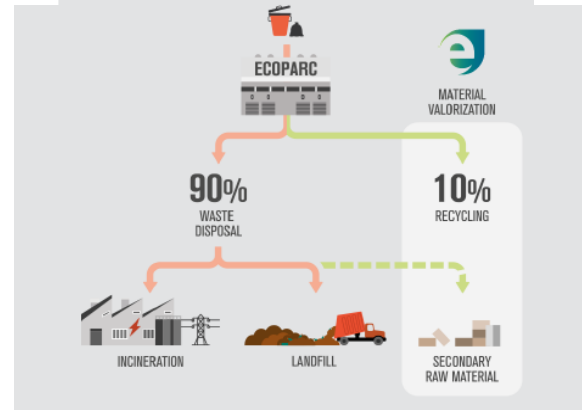
EcoPlanta Molecular Recycling Solutions has the aim to boost new circular economy and a responsible and sustainable business & production.

Methanol is the most used basic product in chemical industry and is used in multiple manufacturing processes. Ecoplanta will be the first green methanol factory in Spain. Today, methanol production comes mainly from fossil fuels (natural gas & coal). Green methanol produced from molecular recycling in Ecoplanta means savings in import & hydrocarbons consumption.

Benefits

- ✓ To reduce waste problematics.
- ✓ To minimize climate change causes

[+ INFO](#)



Partners



KPIs

- ✓ **Ecoplanta** will contribute to **improve indexes of material valorization in Catalonia**, planned in PRECAT 20 program and **European objectives 2035**, that fix 10% for landfill, 25% for waste treatment and energy recovery and 65% for recycling and material recovery.

SDGs impact



Organic waste transformation into bioplastics using bacteria

First test in bioplastic bags in industrial scale

The Challenge

- ✓ Transform organic waste into bioplastic.

Innovation/Solution

Venvirotech has developed a process for bioplastic production using bacteria. The system turns organic matter, such as food waste, into a product that can be used as a biodegradable alternative to single-use plastic.

The biotech startup began its pilot phase near Barcelona, at a BonArea supermarket plant, where they were able to develop a technology test based on bioplastic bags on an industrial scale with a potential customer. It is currently developing new pilots, including waste from Nestlé coffee production.

Benefits

- ✓ Provide an alternative bioplastic bags and other plastic products.
- ✓ Reduction of greenhouse emissions.



Partner



KPIs

- ✓ **4 tons** of organic waste management per day in each VE-Box.
- ✓ **One day process.**
- ✓ **3%-25% Yields** of conversion to bioplastic.
- ✓ **5%-40% Savings** in organic waste management.

SDGs impact



[+ INFO](#)

Sun protection, for curtains and blinds

Semi-translucent technical fabrics made of 100% recycled polyester

The Challenge

- ✓ The use of recycled PET yarns

Innovation/Solution

The recycled polyester yarns used in manufacturing have quality and characteristics identical to those produced with raw materials virgins. Planet FR and Ecoplanet FR avoid glare and They offer good visual comfort while maintaining privacy. Both have a good absorption coefficient acoustic and Greenguard certified as low emission fabrics.

The company that supplies the recycled polyester raw material, provides the Global Recycled Standard (GRS) certificate, a standard for the traceability and verification of the content of recycled material in a product.

Benefits

- ✓ Reduces consumption of energy and resources associated with the manufacture of raw materials
- ✓ Provide a second life to the bottles and prevent their cremation

[+ INFO](#)



Partner

vertisol
contemporary weavers

KPIs

- ✓ Planet FR is made from **recovered PET bottles** (one square meter **equals 6 bottles**)
- ✓ Other characteristics of the tissue are:
One square meter is made from **4/6 thrown away bottles**, Significant level of acoustic absorption (Planet FR), that contribute to indoor **air quality**.



Traceability system with blockchain technology for the circular economy

Blockchain, bringing data transparency to product lifecycle traceability to support the circular economy

The Challenge

- ✓ Improve the performance of the circular economy through blockchain technology

Innovation/Solution

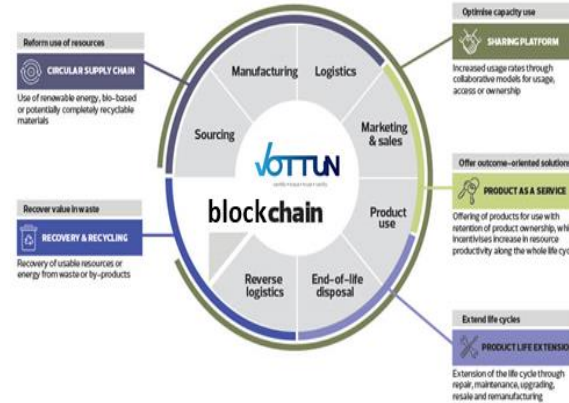
This system keeps track of what products really are, how they are used and what happens during their life cycle in an effective and transparent way. With this technology is possible to implement intelligent audit systems from the records generated by all those involved in the reverse supply chain and certified circular economy processes.

Therefore, blockchain technology will help both corporations and governments meet their environmental commitments in terms of environmental management with certified data and transparency, thus generating a system of environmental control as well as tracking of the reputation of the participants, as an important ally for sustainability and environmental support.

Benefits

- ✓ To get the real carbon impact of materials throughout their life cycle.

+ [INFO](#)



Partner



KPIs

- ✓ **Use of product life:**
Product Reuse – up 20%
Renew. & recycled materials – up 26%
Take-back Systems - new
Product efficiency and durability – new
Leasing – up 145%
Substance phase-out – new
- ✓ **End of product life:**
Waste recycling – down 17%
Product End of Use - new
Donations - new

SDGs impact



New decarburizing asphalt mixtures modified with recycled plastic polymers

A feasible approach for the use of recycled plastic polymers from waste

The Challenge

- ✓ To obtain a decarburizing asphalt mixture that incorporates the maximum amount of recycled polymer and presents enhanced mechanical properties.

Innovation/Solution

Develop a **new formulation of asphalt mixture** using the necessary scientific and technological knowledge that allow the industrial **use of recycled plastic polymers from waste**, as modifiers of the final characteristics of an asphalt mixture in order to obtain pavements with mechanical properties that **improve its strength and durability**.

Benefits

- ✓ Obtention of a decarburizing asphalt mixture that incorporates the maximum amount of recycled polymer possible and at the same time has a level of resistance to degradation by spillage of fuels much higher than those currently on the market.

[+ INFO](#)



Partner

soriguè

City: Balaguer

KPIs

- ✓ Increase of 80-100% of existing modulus
- ✓ 8 Tn of recycled plastic polymers saved
- ✓ Better behaviour to fuel spillage
- ✓ Raw materials saved

SDGs impact



Innovative technologies and new ways of recovering glass recycling waste

An approach to a more efficient and ecological glass recycling process

Chemistry, energy and water industries

The Challenge

- ✓ To develop reliable processes and methods to be able to valorize all by-products from the glass recycling process, thus, minimizing waste products.

Innovation/Solution

Innovative technologies and/or processes for the creation of valuable products such as **zeolites** and **composites** from the residual fraction such as aspirate powder will be researched and developed. Finally, recovery methods will be developed for all residual fractions and by-products of glass treatment. The resulting products have **potential applications such as filter materials for water treatment, sand for sports fields and abrasives.**

Benefits

- ✓ Development of 5 new eco-friendly applications for suction dust, micronized fractions and sand glasses.
- ✓ Near zero waste production.
- ✓ Safety, quality and purity of the new products will be aligned with EU regulation and will meet the end-market requirements to facilitate future market access and commercialization.

[+ INFO](#)



Partner:



SANTOS JORGE

Collaborator:



City: Barcelona

KPIs

- ✓ >7500 TPY of suction dust recovered or recycled
- ✓ 19600 TPY of micronized fractions valorised
- ✓ Production of 7600 TPY of sand glass with filtering validated properties

SDGs impact



Use of by-products and recoverable residues from the paper industry in the asphalt industry

An approach to reusing cellulosic waste from the paper industry as additives in asphalt mixtures

The Challenge

To design a laboratory scale procedure for the recovery of cellulose that will allow to reuse a good amount of waste that will be later used to improve mechanical characteristics of high-performance asphalt mixtures in Catalan roads.

Innovation/Solution

To study a new system for the recovery of two different wastes from the paper industry, such as **fiber rejects from mechanical separation**, on the one hand, and **sludges from on-site effluent treatment**, on the other hand, to be further used in the **road construction industry as additives** in high performance asphalt mixtures.

Benefits

- ✓ Development of a laboratory-scale process to dry up to 90% of dryness and to sterilize a minimum of 200 kg of cellulose from the paper industry waste
- ✓ Development at laboratory scale a minimum of two high performance asphalt mixtures that incorporate the recovered cellulosic waste.
- ✓ Validation of the new asphalt mixtures in real conditions through the construction of a 200 m section road.



Partner:

Romero Polo

[+ INFO](#)

City: Lleida

Build environment

KPIs

- ✓ Potential valorisation of up to 35,000 tn/yr of cellulosic waste.
- ✓ Fabrication on high-performance asphalt mixture with lower carbon footprint.
- ✓ Increased cost savings in the paper industry

SDGs impact



Bio-repaving of roadways

The use of organic compounds to decrease the usage of virgin aggregates and bitumen for the maintenance of roads

The Challenge

- ✓ To demonstrate that the reuse of asphalt pavement materials can be facilitated using biomaterials.

Innovation/Solution

A technical solution will be evaluated with the aim of **reducing the use of virgin aggregates and bitumen** for road maintenance and construction. This solution will not only have the advantage of using organic viscoelastic binder but will also provide **equivalent performance** compared to conventional asphalt materials.

Benefits

- ✓ Use of a bio-sourced and renewable binder
- ✓ Valorization of road waste
- ✓ Preservation of local resources non-renewable (aggregates)
- ✓ Reduction of CO2 emissions
- ✓ Energy saving
- ✓ Equivalent performance compared to conventional asphalt



Partner:



+ [INFO](#)

City: Tarragona/Barcelona

KPIs

- ✓ Minimum saving of 40% of new aggregates
- ✓ Asphalt complying with the specifications of the UNE EN 13108-1 standard.
- ✓ Energy saving of 7% per ton of Asphalt
- ✓ CO2 direct emission reduction of 36% per ton of asphalt
- ✓ CO2 indirect emission reduction of 32% per ton of asphalt

SDGs impact



Integral Recycling of Slurry into Fertilizers, Energy and Water

The implementation of advanced technology to decrease the slurry-related issues derived from the pig agroindustry

The Challenge

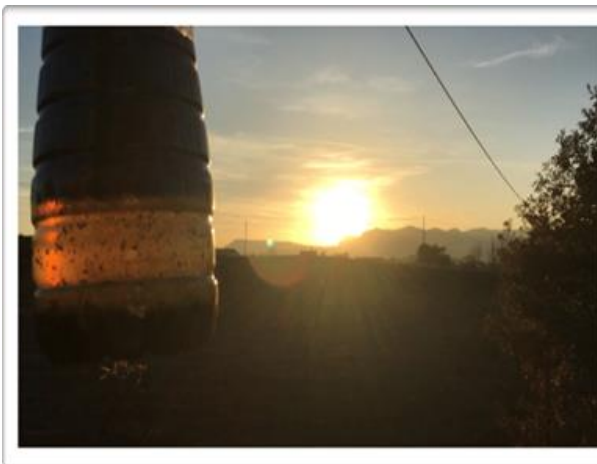
- ✓ To Implement the new MS.BIO-NPK.CATOXI technology in an industrial pilot plant for the **integral treatment of slurry**.

Innovation/Solution

The innovative advanced technology PURINTEGRA allows the efficient separation of total suspended solids, with further generation of **Renewable Energy (R.E.)** from the dried sludge by pyrolysis, the recovery of **NPK-based** nutrients and the generation of Bio fertilizers. It also allows the obtention of **optimal water** for its reuse through advanced catalytic oxidation of the remaining trace organic carbon.

Benefits

- ✓ Generation of Bio fertilizers
- ✓ Thermic and/or electric energy for the farm
- ✓ Support to National & European environmental policies.
- ✓ Avoid 6800 t/y of waste (slurry-to-soil pollution) per each 4000 heads of livestock.
- ✓ Obtaining optimal water for internal reuse (irrigation)
- ✓ Increasing recycling process efficiency in > 85%
- ✓ New real business opportunity / deal for the farmer



Partner:

SAT.84.CAT
"Explotació
Agrària la Rovira"

[+INFO](#)

Collaborators:



KPIs per each 4000 pigs

- ✓ 8600 t/y recycled slurry
- ✓ 8000 t/y optimal water
- ✓ 30 MWh/y (thermic)
- ✓ 20 MWh/y (electric)
- ✓ 730 t/y generated bio-fertilizers
- ✓ 40 t/y recycled N-nutrient
- ✓ 20 t/y recycled P-nutrient
- ✓ 30 t/y recycled K-nutrient

SDGs impact



New sustainable polymer for the tanning industry from hazardous substances considered waste in the chemical industry

Chemical, energy & water industries

The Challenge

- ✓ To obtain a well-characterized residual batch, synthesize a new polymer and validate it for its commercialization.

Innovation/Solution

Recover the sewage batches from the Alcover Química plant that contains hazardous substances in order to generate a high value-added and environmentally sustainable chemical for the tanning industry.

Benefits

- ✓ Obtention of a characterized and suitable residual batch without biological waste to use as a raw material for the synthesis stage.
- ✓ Obtention of a polymer that has good properties as a retanning agent (high fullness, high tightness, high resistances)



Partner:



+ [INFO](#)

City: Barcelona

KPIs

- ✓ **New product** that comes from **residual waste water**
- ✓ **Reduction of the pollutant load** in the treatment plant
- ✓ **Water reuse** to dissolve liquid products

SDGs impact



Retraction-compensating additives for high-performance concrete from non-recyclable residues

The use of both urban and industrial residues for the production of a superior high-performance concrete

The Challenge

- ✓ Understand the **reactivity** and, from this, the **functionality** that **non-recyclable waste** can have for its recovery and usage as additives to compensate the shrinkage of concrete.

Innovation/Solution

To study the viability of using both urban waste (**by-products of glass recycling**) and of industrial origin (**low-grade oxides from the manufacture of alkaline oxides**) as potential additives that can be used to compensate the concrete shrinkage.

Benefits

- ✓ Valorization of residues and industrial by-products for the production of compensated shrinkage concrete.
- ✓ Optimal processing variables that allow to increase the sustainability of the process and its economic viability in accordance with the technical requirements for its use as construction materials. Increasing process efficiency %
- ✓ New uses for non-recyclable waste encourage circular economy between industries.



Partner:



+ [INFO](#)

Collaborators:



City: St. Feliu de Llobregat, Barcelona

Build Environment, Construction

KPIs

- ✓ Partial recovery of the 4% of non-recyclable glass waste, which represents a volume of 10,000 tons and 47,000 tons per year in Catalonia and Spain, respectively.
- ✓ Can achieve a 3-5% reduction of usage of Portland cement in non-structural concrete applications, representing a saving in CO2 emissions of 720 Tn and 4,000 Tn per year in Catalonia and Spain, respectively.

SDGs impact



The circular economy applied to organic biolubricants for sustainable mobility (ECOBIO LUB)

Developing a new conversion process: used vegetable oil waste to value-added products

The Challenge

- ✓ Search for new ways, strategies and applications for the re-use of vegetable oils generated in the food industry and re-introduce them into sustainable urban mobility.

Innovation / Solution

- ✓ Replace the current use of vegetable oils as biofuels, thus, preventing CO₂ emissions. Throughout the project, a range of lubricant formulations will be developed for the bicycle sector where 100% of the ingredients used for the formulation will be biodegradable.

Benefits

- ✓ Improved chemical characterization of vegetable oil waste from the frying industry and from the restoration sector.
- ✓ Converting at least 80% of the residue to useable lubricant.
- ✓ New formulations of a range of FULLY biodegradable lubricants with a minimum of **50% reused vegetable oil (remainder virgin bio-based materials)**.
- ✓ Reduction of raw material consumption by at least **50%**.



Partner



+ [INFO](#)

Collaborators



Sustainable mobility

KPIs

- ✓ **Product content:** 100% components biobased and biodegradables
- ✓ **Product content:** a minimum of 50% of re-used vegetable oil
- ✓ **Product content:** Elimination and reduction of water and impurities in the re-cycled vegetable oil to <2% p/p

SDGs impact



Reusing leftover sand from the foundry industry for the cores production

The Challenge

- ✓ Study the viability of reusing sand excess in the cores production process.

Innovation/Solution

To face the challenge, various technologies will be investigated in order to develop a treatment process that allows the sands to be cleaned and recovered with optimal quality for reusing. The project aims to reduce the amount of sand to be managed by more than 85%, either in landfills or through low value-added recovery routes.

Benefits

- ✓ A **sustainable process to recover the silica sand** with optimal characteristics for the cores production process.
- ✓ Reduce waste and emissions CO₂
- ✓ Reduce the use of resources natural - overexploitation
- ✓ Increasing resource and process efficiency
- ✓ Possibility of reducing production costs.
- ✓ Reduction of the amount of sand to be managed in landfilling
- ✓ Incorporation of up to **90% of sand recovered** in the core production. (virgin sand consumption reduced to **10%**)



Partner: Condals Foundry, S.A.



+ [INFO](#)

City: Manresa, Barcelona

Collaborators:



KPIs

- ✓ **Recover more than 85% of the silica sand** with optimal characteristics for the core production process.
- ✓ Incorporation of up to **90% of sand recovered** in the “core” production. (virgin sand consumption reduced to **10%**)
- ✓ 30983 Kg/year of CO₂ avoided emissions

SDGs impact



Bio2Coat S.L.

Natural Preservation Technology

The Challenge

- ✓ Reduce food waste: 33% of all food produced globally is lost or wasted every year, being 45% of root crops, fruits and vegetables.
- ✓ Reduce the amount of plastic use in the agro and food industries.

Innovation/Solution

A 100% natural and sustainable edible coating for food made out of food. The coating is colorless, odorless and has no impact on flavor. Bio2Coat is safe for consumption, preserves nutritional value and extends product freshness.

Benefits

- ✓ Reduction of food waste along the value chain
- ✓ Reduction of plastic use
- ✓ Reduction of environmental impacts



BIO2COAT
NATURAL PRESERVATION TECHNOLOGY

Partners:



City: Terrassa, Barcelona

KPIs

- ✓ 100% natural ingredients
- ✓ Up to 30% weight loss reduction in fruit
- ✓ Up to 15 days of shelf life extension for fruits
- ✓ Improve visual aspects.

SDGs impact



+ [INFO](#)

REMTech

ECO membrane production for sustainable water treatment

The Challenge

By 2025 around **2.000.000** of **end-of-life filters** used in the desalination industry will be annually **disposed of in landfills**.

Innovation/Solution

Recollect end-of-life reverse osmosis membranes to transform them into **valuable market products**, such as refurbished **reverse osmosis**, recycled **nanofiltration** and recycled **ultrafiltration membranes**.

Benefits

Compared to non-recycled membranes:

- ✓ Flexibility: Customized performance
- ✓ Efficiency: Better ratio € / life span
- ✓ Affordability: Saving up to 60% of the replacement cost
- ✓ Sustainable production:
 - ✓ 25-fold less fossil fuels resources
 - ✓ 50-fold less Global warming impact

+ [INFO](#)



www.recycledmembranes.com

Partners:



City: Girona

Novelty

Optimization of the refurbishing and recycling process by using a novel membrane housing

- 10-fold less water and chemicals
- Easy to assemble
- Flexibility of use

Who can use it?

Small and medium water treatment facilities treating **water for irrigation**, **urban wastewater** or **industrial wastewater**

Contact:

recycledmembranes@gmail.com
raquel.garcia@udg.edu

SDGs impact



BIOM Bioinspired Materials solutions

Biotechnology for circular economy

Benefits

The Challenge

✓ To Introduce in the industrial sector biotechnological based processes to produce economically sustainable and environmentally friendly commodities: Bioadhesives, bioplásticos, nanocelulose,

Innovation/Solution

Microalgae incorporate CO₂ to produce biomass. Knowledge applied in the microalgae and fermentative biotechnology fields for the development biotechnological processes involving microalgae and other microorganism for a sustainable and clean processes. Among their innovations they have developed:

A formulation of a novel rich culture media based on microalgae for low-cost biotechnological fermentation processes.

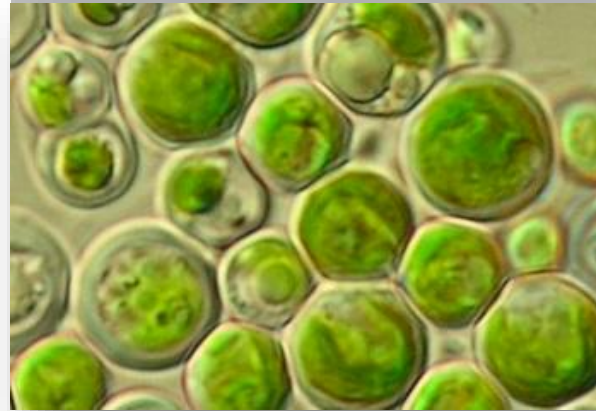
Formulation of a novel bioadhesive.

Production of bacterial cellulose for cosmetic, packaging and textile sectors

Benefits

- ✓ Neutral CO₂ production
- ✓ Low-cost clean technology
- ✓ From renewable sources

+ [INFO](#)



Partner

BIOM
BIO INSPIRED MATERIALS

City: Barcelona

- ✓ **Ficogenic Broth.** Culture media for biotechnology applications
- ✓ **Nanulose:** Bacterial cellulose for cosmetics, packaging and textile
- ✓ **Green adhesive:** paper and cartonboard wood glue

SDGs impact



ARENAREC

Research of new processes to valorize gravel sands

The Challenge

- ✓ Definition of new, modern, and more efficient processes to improve sand recovery to more than 90% (circular economy).
- ✓ Generation of new products: sands with more than 99% SiO₂, feldspars, and calcium carbonate. Products with appropriate characteristics to industrial application.

Innovation/Solution

A new concept of Mineral Processing, based on density, physic-chemical characteristics, and conductivity.

+ [INFO](#)



Partner



City: Bellpuig (Catalunya)

Benefits

- ✓ New products generation with higher mass recovery and higher contents
- ✓ Circular economy
- ✓ More jobs with higher personal qualification

SDGs impact



The obtention of nanocellulose from the primary sludge of the paper industry

An approach to minimize the amount of waste produced in the paper-recycling industry

The Challenge

- ✓ To patent and implement a reliable process to minimize the waste produced in the paper industry by producing an added-value product such as nanocellulose from waste obtained in the paper recycling process.

Innovation/Solution

To study a nanocellulose obtaining process from the paper industry waste, specifically from the primary sludge of the treatment plant. This project will allow the recovery of this cellulosic waste to obtain an added-value product, **nanocellulose**, reducing the amount of waste that is sent to composting.

+ [INFO](#)



Partner:



City: Barcelona

Benefits

- ✓ **Reduced waste** in the paper industry
- ✓ More **affordable** **paper recycling process**
- ✓ Engineering of a **nanocellulose obtaining process** from the primary sewage sludge from the paper industry (patent).
- ✓ Nanocellulose: **Broad range of applications**

SDGs impact



Development of Decision Support Systems

Optimizing forest management

The Challenge

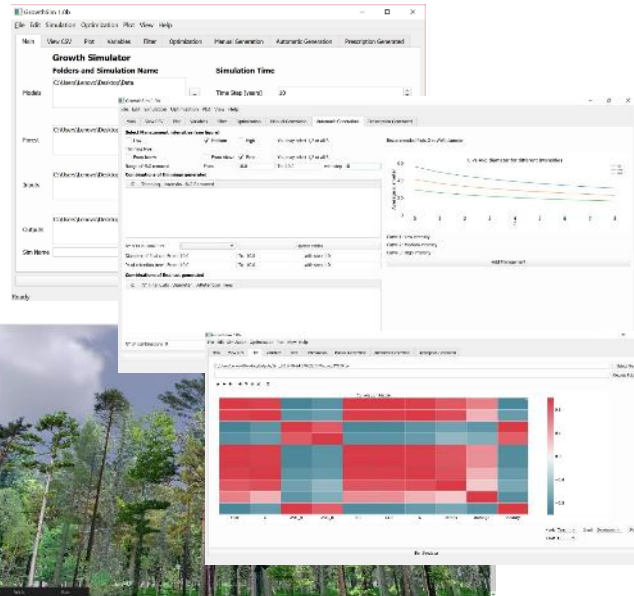
- ✓ Develop computerized tools that help to improve forest management considering multiple ecosystem services while considering impacts of climate change.

Innovation/Solution

- ✓ Develop computerized tools that help to improve forest management considering multiple ecosystem services and addressing risk and uncertainty (e.g fires, climate change).

Benefits

- ✓ Improve forest management practices
- ✓ Improve the provision of ecosystem services
- ✓ Adapt forests to global change



Partner



City: Solsona

KPIs

- ✓ Improves the efficiency of forest planning and management procedures and protocols
- ✓ Develop methods to be used by the public administration, forest owners, industry and non-governmental organizations for enhanced integration of adaptive strategies in multiple-objective landscape management planning
- ✓ Generates an overall vision, with the ability to work at different planning scales (strategic, tactical and operational)

SDGs impact



100% compostable packaging for candy

Ecologically honey made candy with environmentally friendly packaging

The Challenge

- ✓ Produce a 100% compostable packaging to store candy

Innovation/Solution

New line of organic candy with a 100% compostable packaging, to avoid waste and negative impact to the environment.

The candy does not contain any stabilizer and is made with all-natural products. The wrapper's material is Naturflex TM and complies with the OK Compost home certification, the T.LAM 607 packaging as well as with the OK Industrial Compost certification.

Both container and wrapper can be littered in the organic bin; the container is disintegrated within 3 months, and the wrapper within 6-8 weeks.

Benefits

- ✓ Avoid single-use plastics

[+ INFO](#)



Partner



KPIs

- ✓ **0% waste**
- ✓ **Cost effective**
- ✓ **Full degradation** over a period of **12 weeks**.
- ✓ **Natural ingredients**

SDGs impact



Paperpaste Mannequins

Manufacturing sustainable mannequins made out of recycled paper

The Challenge

- ✓ Solve the problems related to sustainability and functionality of the current mannequins.
- ✓ Produce a complex product using an unstable but organic material while embracing the circular economy (materials, packaging, processes, suppliers...)

Innovation/Solution

The mannequins are made with paper paste, a recycled, recyclable and biodegradable compound.

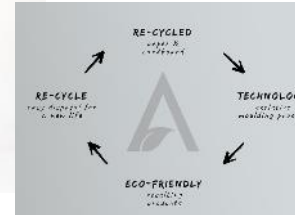
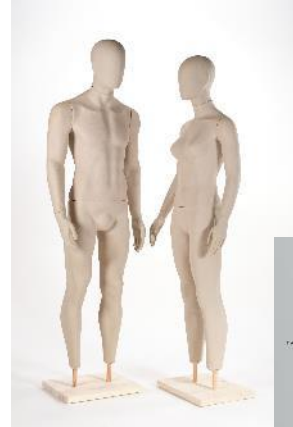
We designed an entire new concept for fittings and accessories, making the model light and versatile.

Noble materials like wood and metal are used for fastening, and the adhesives are water-based. We are able to provide a disposal guide so the customer can recycle it himself.

Benefits

- ✓ Ecology, the most sustainable of the market
- ✓ Weight, reduced between a 30 and 50%
- ✓ Modularity, all-in-one fitting systems
- ✓ Usability, easy attachments trough magnets

[INFO](#)



Partner





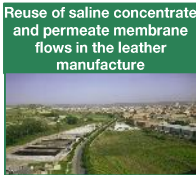


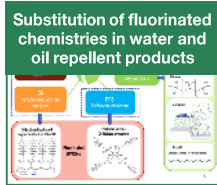
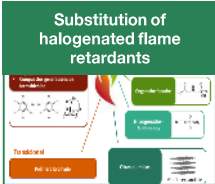






KPIs



















- ✓ Local production
- ✓ Km0 suppliers
- ✓ Biodegradable raw material (recycled paper)
- ✓ Renewable energy sources
- ✓ Sustainable packaging













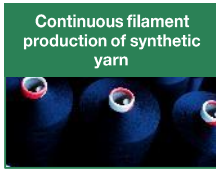
SDGs impact

































5. COMPANIES & RESEARCH CENTERS









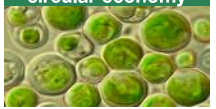






Company	Logo	Description	Contact	Use Cases
A3 Leather Innovation Center		The A3 Leather Innovation Center is a research group at the University of Lleida (UdL), specialized in the leather production chain. Its facilities are located on the Igualada-UdL University Campus in Igualada (Barcelona). The group aims to develop innovative projects in the leather sector and to enhance Barcelona's leather cluster.	 https://a3center.cat	
AEI Tèxtils		The cluster AEI TÈXTILS is a non-profit association, which has the aim to join all Catalan companies and organizations related directly or indirectly to the technical textiles sector and which form a specialized productive area with competitive advantages.	 https://textils.cat/es/	 
AGÈNCIA CATALANA DE L'AIGUA		The Catalan Water Agency (ACA) is the public company of the Generalitat de Catalunya that is responsible for the planning and management of the water cycle in accordance with the basic principles of the Framework Directive of the 'water.	 www.aca-web.gencat.cat	
AGÈNCIA DE L'HABITATGE DE CATALUNYA		A citizen service space where everything the Government offers in terms of housing is centralized.	 www.agenciahabita.tge.gencat.cat	
















Company	Logo	Description	Contact	Use Cases
AGENCIA DE RESIDUS DE CATALUNYA		The waste generated in Catalonia and those managed within its territory are the responsibility of the Agència de Residus de Catalunya. Radioactive waste is excluded from its competence; waste resulting from the exploration, extraction, treatment and storage of mineral resources and the exploitation of quarries	 Home. Agència de Residus de Catalunya (gencat.cat)	
AIGÜES DE BARCELONA		Company that manages the metropolitan public service of the water integral cycle, which includes the three branches referred above: water supply, sewerage and wastewater treatment and reclamation of treated water.	 www.aiguesdebarcelona.cat/	   
AIGUASOL		Aiguasol has become a state benchmark in dynamic simulation of thermal systems, being, at the same time, exclusive distributor of programs such as TRNSYS and developer of TRANSOL, reference programs worldwide and state.	 https://aiguasol.com/	
ALIER SA		Alier SA is an internationally recognized waste manager for the collection, transport and treatment of waste. .	 www.aliersa.com	
ALITER RENOVABLES GRUP		Specialized PV engineering. Activities of consultancy, promotion, design, construction and exploitation of PV plants, both self consumption and utility scale.	 www.alitergroup.com	
















Company	Logo	Description	Contact	Use Cases
ALTERNATIVE ENERGY INNOVATIONS		Its main objective is the development of technologies for the production of electrical energy through the recovery of residual heat (energy harvesting).	 www.aeinnova.com	
AMAPEX		Company expert in the application of biotechnology to industrial wastewater treatments. Extensive research has been conducted through its own lab to find specific strains of bacteria that can decompose the hazardous products present in heavily contaminated industrial waters	 www.amapex.net	
AMPHOS 21 CONSULTING S.L		Technical and environmental consultant focused on toxic and hazardous waste management, water resource assessment, environmental management, and soil and water pollution.	 www.amphos21.com	 
ANGLÈS TEXTIL		They produce a wide range of special filament yarns with an important focus on sustainable polymers and processes. Their products can meet requirements of different sectors and applications such as automotive, home textiles, sportswear, workwear, medical, fashion	 www.antex.net	










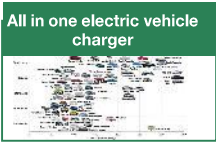



Company	Logo	Description	Contact	Use Cases
ARAVINC		Ara Vinc is the leading urban messaging company in Barcelona, which also offers Courier and Transport, Logistics, document custody and confidential destruction, access control and business outsourcing services.	 https://www.aravinc.com/	<div>Reuse and recycling of clothing, accessories and footwear</div> 
ARENES BELLPUIG SL		Arenes Bellpuig has more than 80 years of experience in the extraction, treatment and classification of arid materials such as gravel and sand.	 www.arenasbellpuig.com	<div>Research of new processes to valorize gravel sands</div> 
ARPE		The company is a leader in Spain in the manufacture and customization of suede and microfiber towels with images, through print-based systems in digital technology, with an environmental awareness.	 https://arpe.es/	<div>Circular Tuva towels</div> 
ASTREA MATERIALS		Astrea Materials is a company located in Barcelona specialized in advanced materials for critical air filtration in life support systems and personal protective equipment.	 www.astreamaterials.com	<div>Highly efficient catalysts for air filtration systems</div> 
AXIOMA		Company specialized in implementing comprehensive solutions and health support services to organizations in the field of health. Our external management solutions cover a range of services and products designed with maximum reliability, guaranteeing our social commitment and respect for the environment.	 www.axiomasoluciones.com	<div>Surgical clothing reuse</div> 













Company	Logo	Description	Contact	Use Cases
AZUARA		Talleres Azuara is a Spanish company focused in chemical industries, manufacturing and handling of tissue paper, compound animal feed, human feed, and waste treatment and management.	 www.talleresazuara.net	
BAULA		Baula was created in 2015, and finished the product development in 2018. Baula started selling at national and international level and it is always working on innovation and product improvement.	 www.ecobaula.com/	
CENTRE TECNOLÒGIC BETA - UVic-UCC		BETA Tech. Centre, at the UVic-UCC, aims to improve and promote competitiveness and technological capacities of the society, through the development of R&D&I collaborative projects with private companies and public bodies.	 www.betatechcenter.com Info.beta@uvic.cat	
BCIRCULAR MOTOS		It was created in the IQAC, part of the Spanish National Research Council (CSIC). The company is dedicated to developing and commercialising highly innovative lipid ingredients for the cosmetic and dermo pharmaceutical industry using proprietary technology.	 www.clustermoto.org/noticias/bcircular-nuevo-socio-de-clustermoto/	
BCome		Platform for sustainability and innovation management in the textile and apparel industry. The index of sustainability of each product is evaluated, across four impact areas: planet, people, transparency and circularity.	 BCOME – Sustainability Platform	

Company	Logo	Description	Contact	Use Cases
BICOSOME		Company created in the Institute of Advanced Chemistry of Catalonia (IQAC) part of the Spanish National Research Council (CSIC). The company is dedicated to developing and commercialise highly innovative lipid ingredients for the cosmetic and dermopharmaceutical industry using proprietary technology	 www.bicosome.com	 Sustainable extraction of microalgae to develop skincare active ingredients
BIOGRÜNDL		Biogründl, S.L. is currently occupying a prominent place in the active matter sector for the Cosmetology and Dermopharmacy industries. Biogründl, S.L. activity is R+D in the field of active materials through a new conception and dynamic focus.	 https://www.biogrundl.es/	 Reuse of byproducts of the cork industry for cosmetics
Bioinspired Materials S.L.		The Bioinspired Functional Materials Lab (BFML) focuses on the development of functional materials and systems for energy and environments. Specially focused in the design of biomimetic electrocatalysts, organic/inorganic hybrid materials, and unconventional energy systems for efficient conversion and storage of renewable energies, hydrogen production, CO2 utilization, and electrochemical biomass/waste refinery.	 www.bioinspire-d-materials.com	 Biotechnology for circular economy
BIOO (ARKYNE TECHNOLOGIES SL)		Green electricity from plants' photosynthesis.	 www.biootech.com	 Green electricity from plants' photosynthesis
BRUGAROLAS, SA		Large experience in lubricant sector, being one of the oldest grease producers in Europe. It has one of the most largest portfolios in the sector. It has participated in many R&D projects under the cover of EU R&D programs.	 www.brugarolas.com lmuntada@brugarolas.com	 Research and development of innovative greases

Company	Logo	Description	Contact	Use Cases
CAFÈS NOVELL		The company was founded in 1958 by Mr Ramon Novell Vivó. The passion for the sector and the eagerness to innovate has led Cafès Novell to continue producing quality coffee and to strive everyday towards seducing with the best cup of coffee	 www.cafesnovell.com m info@cafesnovell.com	
CARINSA		Creates, manufactures and markets of all kinds of flavours, fragrances and prepared additives for the food, The customer service is one of the key values in the organization which allows us to obtain a high degree of satisfaction and loyalty from our customers.	 www.carinsa.com	
CATALAN WATER PARTNERSHIP		Cluster for the promotion of R&D multilevel projects to enhance the competitiveness and the sustainability of the water sector in Catalonia. With more that 110 partner companies.	 www.cwp.cat	   
CATOR		Cator is specialised in the collection and treatment of used mineral oils from garages, repair shops and industries. The company transforms used mineral oil into raw materials suitable for mineral oil production, thus encircling the loop of mineral oil lifecycle.	 www.cator-sa.com	

Company	Logo	Description	Contact	Use Cases
CELSA GROUP		Celsa GroupTM is one of the leading European multinationals in long steel products, the most diversified and vertically integrated. We are based on a circular economy model, recycling more than 8 million tons of scrap annually.	 www.celsa.com anna.casals@gcelsa.com	<div>Transformation of EAF slag into high security asphalts</div>  <div>Recycled plastics from end of life vehicles waste</div> 
CESPA GESTIÓN DE RESIDUOS SA		Cespa is part of the Ferrovial Servicios Group, which offers ambiental services to both private and public parties, and specializes in offering alternatives for waste management.	 www.ferrovialservicio.smedioambientales.com	<div>Recyclable waste selection</div>  <div>Optimization of textile waste management</div>  <div>PET waste recycling</div> 
CENTRE CATALÀ DEL PLÀSTIC		The Centre Català del Plàstic (CCP) is a public R&D centre created in 1993. It carries out R&D activities and technology transfer on plastics for companies, including technical training.	 www.upc.edu/ccpp	<div>Natural Preservation Technology</div> 
CENTRE DE CIÈNCIA I TECNOLOGIA FORESTAL DE CATALUNYA		Centre de Ciència i Tecnologia Forestal de Catalunya is a reserach centre that contributes to the modernisation and competetiveness of the forest sector. Its is supported by the Government of Catalonia.	 www.ctfc.cat	<div>Development of Decision Support Systems in Forest Management</div> 



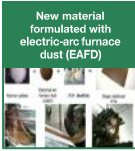











Company	Logo	Description	Contact	Use Cases
CETAQUA WATER TECHNOLOGY CENTER		Cetaqua integrates, manages and executes projects in research, technological development, and innovation in the integral cycle of water in order to propose innovative solutions for companies, public administration, and society.	 www.cetaqua.com	   
CIRCULARIS		Circularis was born with the desire to provide its clients with innovative, sustainable and efficient solutions in the materials recycling sector. King its offer to high-tech solutions.	 www.circularis.es/es/	
CIRCONTROL		Development of innovation and technology to offer the electric vehicle parking and recharging markets, comprehensive solutions and competitive products.	 www.circontrol.com/es/nosotros/	
CIRCOOLAR ETHICAL WORKWEAR S.L.		Circoolar produces ecological workwear for businesses committed to sustainability and the SDGs. The company's products are designed and manufactured according to circular economy principles.	 www.circoolar.es	


Company	Logo	Description	Contact	Use Cases
CLUSTER MOTO		Non-profit association, open to companies representing the entire value chain of two-wheeled vehicles industry and Urban Mobility, based in Spain. It currently brings together 72 associated companies, promoting innovation and access to newer technologies to boost competitiveness and internationalization.	 www.clustermoto.org	
COAMB		The COAMB's mission is to represent, defend and promote the role of environmental scientists, as well as environmental professionals and students, order the exercise of their profession, ensure professional ethics, and promote respect for the environment among society.	 www.coamb.cat	
Col·legi d'Enginyers Industrials de Catalunya		Association of Industrial Engineers of Catalonia. Provides services, resources, networking, training courses and conferences to their 10.000 associates.	 www.eic.cat	
COLORSENSING		ColorSensing is a technology-based company that develops applications based on color correction and measurement in digital images. Its solutions help manufacturers and distributors of packaged foods to reduce food waste and ensure the quality and safety of their products. thanks to a smart tag	 www.colorsensing.com	



















Company	Logo	Description	Contact	Use Cases
COMEXI GROUP INDUSTRIES SAU		Manufacturer of machines for flexible packaging industry. Machines lines: - Printing: Flexo, Offset and digital - Laminating: SB and SL - Slitting	 www.comexi.com	<div>Technology to reduce printers' impact on the environment</div> 
COMSA		COMSA Corporación is a leading Spanish group in infrastructure and engineering. Committed to sustainability, responsible growth and the territorial structure of the countries in which it operates.	 www.comsa.com	<div>Longer life for ballast in rail</div> 
CONCDORCHEM ENVITECH S.L		Condorchem Envitech is an environmental engineering company offering water, effluent and air emission treatment solutions for a wide range of industrial activities.	 www.condorchem.com/	<div>Liquid waste treatment by Zero Liquid Discharge (ZLD) systems</div> 
CONDALS FOUNDRY		Condals Foundry is a multinational world-class company serving advanced technical solutions for the automotive, railway and construction sectors since 1976.	 www.condalsgroup.com	<div>Reusing leftover sand from the foundry industry for the cores production</div> 














Company	Logo	Description	Contact	Use Cases
COOLTRA		Offers a wide range of two-wheeled mobility solutions: short-term motorcycle rental (for days), long-term (for months), rental with option to buy, motorcycle rental or leasing for companies, fleet management and sale both private and public companies and administrations.	 www.cooltra.com	
CROMOGENIA		Cromogenia is committed to the most effective technology and R&D to improve chemical processes and products, as well as in the research and promotion of clean and environmentally friendly technologies.	 www.cromogenia.com	    
COTTON HIGH TECH SL		Spanish Company specialized in the production of a full range of products for the Intimate Feminine Hygiene (tampons, pads, pantyliners and other related products) characterized for being made with Certified Organic Cotton and Biodegradable materials.	 www.cohitech.net	
CTTC - Centre Tecnològic de Telecomunicacions de Catalunya		CTTC's core activity is the conception, design and implementation of research and development projects, which have to produce innovative results in all their development phases, in both scientific and engineering terms.	 www.cttc.es	
















Company	Logo	Description	Contact	Use Cases
CYKLOS CIRCULAR INNOVATION S.L.		Cyklos started its activity as producer of stencil duplication machines. Currently, the company offers a wide range of creasing, perforation, folding, cutting and punching machines, specially in the field of metal processing.	 www.cyklos-technology.com	
CICLIC		Ciclic is the brand of the GCR Group that leads the manufacturing of industrial polyethylene (PE) and polypropylene (PP) compounds in Western Europe.	 www.gcrgroup.es	
DAN*NA		Valorization of organic waste to produce bioplastics for the cutting-edge technological.	 www.artificialnature.com	
dbA - Centre de desenvolupaments biotecnològics i agroalimentaris		Specialized in biomass valorization using physical, chemical and enzymatic methods. Obtained products apply to different sectors: food, chemical building blocks, agriculture, tanning, textile, energy storage, plastics or lubricants.	 www.dba.udl.cat	

Company	Logo	Description	Contact	Use Cases
(DIOPMA) Centre de Disseny i Optimització de Processos i Materials		DIOPMA is a research group of the Department of Materials Science and Physical Chemistry at UB. Researchers at DIOPMA have long experience in Materials Engineering, Energy materials and Environmental technologies	 www.ub.edu/diopma/	  
ECOPOL TECH SL		Company focused in research, development and manufacturing of advanced polymers with a special focus in polyurethanes and polyureas colloidal science and nanotechnology.	 www.ecopoltech.com	
ECO SILENCE		Silence is a Spanish company founded in 2011 that designs, develops and produces highly efficient 100% electric scooters with its own R&D&I. The company also develops its own rechargeable battery technology, manufactured in Barcelona, providing proximity and safety to their clients.	 www.silence.eco/	
EIFFAGE INFRAESTRUCTURAS		Eiffage Infraestructuras is an experienced construction company with more than 170 years of history. Its main activities are civil engineering, metal industry, roads construction and energy.	 www.eiffageinfraestructuras.es	








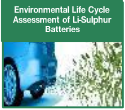








Company	Logo	Description	Contact	Use Cases
ELDE		The RIS3CAT Aigua community is a community of 56 entities between companies, technology and research centers, universities and associations, with the objective of promoting the economic transformation of companies linked to the management and consumption of l'Aigua.	 www.comunitataigua.cat/	
ENERKEM		The first company in the world to produce renewable methanol and ethanol from non-recyclable, non-compostable municipal solid waste at full commercial scale.	 https://enerkem.com/	
ESPIGOLADORS		We recover fruits and vegetables from the primary sector and companies, and we channel 90% to food distribution points and the remaining 10% produce high-quality products that are marketed under the brand "es im-perfect".	 www.espigoladors.cat	
ETISILK SA		ETISILK, S.A., a manufacturer of outdoor fabrics, is working on the approval of its fabrics so that they can be used in sanitary applications (gowns and masks).	 www.etisilk.com	

Company	Logo	Description	Contact	Use Cases
EURECAT		It is the main technology center in Catalonia and the second private organization in Spain in raising funds for H2020. It brings together the experience of more than 650 professionals who generate a revenue volume of 50 million euros per year and serves more than 1,600 companies.	 www.eurecat.org	      
EVARM		Dedicated to the professional preparation of heavy and light vehicles (Dual Fuel). They make "tailor-made suits" so that you have the best possible conversion of your fleets in terms of performance, reliability and safety.	 www.evarm.com/	
FUELIIUM SL		Eco-friendly energy solutions for single-use applications. Paper-based batteries.	 www.fuelium.tech	
FUTURECO BIOSCIENCE SA		SME agro-biotechnology company, founded in 1993, dedicated to the research, development, production and commercialization of environment friendly products for the protection and nutrition of agriculture. One of their main assets is the investment in research.	 www.futurecobiosciences.com	




















Company	Logo	Description	Contact	Use Cases
Gavà Ajuntament		Government Municipality of Gavà	 www.gavaciutat.cat/	
GCR GROUP		GCR Group is a European company with a worldwide presence and is now the leader in the development of high-quality and environmentally efficient recycled compounds and mineral masterbatches for the plastics industry. It has the business units CICLIC, GRANIC, AUTENO and IRTIO	 www.gcrgroup.es	 
GC GOMA CAMPS		Business group dedicated to the manufacture, transformation and sale of tissue paper and other related solutions. They have been committed to the quality and diversity of products, following a commitment to constant innovation and respect for the environment	 www.gomacamps.com	
GO ZERO WASTE		App for a waste-free life	 https://gozerowaste.app/	














Company	Logo	Description	Contact	Use Cases
GRANIC		Granic is a European leader and a world reference in the development of mineral concentrates of calcium carbonate, talc, other derivatives of silicon and other mineral specialties for the plastic sector.	 www.gcrgroup.es/es/granic/home	
GROAU		Groau has created a marketplace for honest brands, where all products have a social or environmental positive impact, to help local and emerging brands.	 www.groau.com	
HILATURAS ARNAU		A leading company in the manufacture of recycled yarns, committed to its participation in environmental sustainability by producing a complete range of yarns made with 100% recycled materials	 www.hilaturasarnau.com	
HILOSA		HILOSA, a company founded in 1947, was a pioneer in the recycling of cotton threads.	 www.hilosa.com	
HONEXT MATERIAL		Honext is an innovative company focused on the development of production technologies to upcycle cellulose based waste. Their first material is a natural and circular material for internal partitions in construction, made from paper mill sludge.	 www.honextmaterial.com	













Company	Logo	Description	Contact	Use Cases
HUMANA		Humana promotes since 1987 environmental protection through second hand textile management by circular economy premises.	 www.humana-spain.org	<div> <div>Optimization of textile waste management</div>  </div> <div> <div>Reuse and recycling of clothing, accessories and footwear</div>  </div>
HYDROKEMOS		Electrochemical patented technology to remove nitrate, ammonia, cyanide, sulphide or other compounds, without waste production, in any type of water (industrial or municipal).	 www.hydrokemos.com	<div>Eco-efficient solution for nitrate/ammonia polluted water treatment</div> 
INSTITUT CATALÀ D'INVESTIGACIÓ QUÍMICA		Founded in 2000 by the Government of Catalonia, is committed to performing excellent research at the frontier of knowledge in two main areas: Catalysis and Renewable Energy.	 www.iciq.es ipunti@ICIQ.ES	<div>Bio-based polymers for high-performance applications</div> 
INFINIT DENIM		Circular fashion Ethically by women in Barcelona. They are a sustainable fashion brand dedicated to extending the life cycle of post-consumer denim. We repair, design and produce, creating new ethical and sustainable products.	 www.infinitdenim.com	<div>Reuse your jeans!</div> 



















Company	Logo	Description	Contact	Use Cases
Institut Català del Suro Foundation		The Catalan Cork Institute Foundation (Institut Català del Suro) is a non-profit and scientific foundation whose mission is the promotion of the cork sector through investigation and research.	 www.icsuro.com/	
IREC		Technology Research center on all the fields of energy since basic research to energy power control devices and management.	 www.irec.cat	   
IRIS		Advanced engineering focused on Circular and Bio-based Economy: digitalization and waste valorization.	 www.iristechnologygroup.com/	
IRTA – Institut de recerca i tecnologia agroalimentàries		IRTA is a research institute owned by the Government of Catalonia. Its general objectives are to promote research and technological development in the area of agri-food, to facilitate the transfer of scientific advances and to evaluate its own technological advances whilst.	 www.irta.es	 

Company	Logo	Description	Contact	Use Cases
ITEC		The ITeC is a private foundation at the service of society that works in the field of the construction sector, with the generation and transfer of information and knowledge and the provision of technological services for the improvement of the competitiveness of the agents of the sector.	 www.itec.es	<div>Shift towards a circular economy for the housing sector</div> 
Korea Institute of Science and Technology (KIST)		Its main goal is to lead Korea's science and technology infrastructure in research, development, and transfer of creative, original technologies. Research areas include brain science, biomedical science, materials/devices, robotics/systems, energy, environment, and life/health.	 www.kist.re.kr	<div>Hydrogen-powered vehicle</div> 
LABAQUA		LABAQUA S.A., was established in 1991 as a service company that offers environmental consulting solutions and analysis laboratory to industry and the administration	 www.labaqua.com/sobre-nosotros/	<div>Catalyst Development for Synthetic Natural Gas Production</div> 
Laboratori d'Enginyeria Química i Ambiental (LEQUIA)		The Laboratory of Chemical and Environmental Engineering (LEQUIA) is a research group of the University of Girona (UdG) devoted to the development of eco-innovative environmental solutions. LEQUIA is a part of the UdG's Institute of the Environment (IMA) and participates actively in the Euro-Mediterranean Tourism and Water Campus of International Excellence (e-MTA). LEQUIA is a "consolidated research group" recognized by the Catalan Government.	 www.lequia.udg.edu	<div>ECO membrane production for sustainable water treatment</div> 

Company	Logo	Description	Contact	Use Cases
LC PAPER		LC Paper manufactures various kinds of paper for converting companies from all over the world, with a product portfolio which has become a referent in terms of sustainability and innovation.	 www.lcpaper.net	
LEITAT		Leitat, founded in 1906, has the mission of managing technologies to create and transfer sustainable social, environmental, economic and industrial value to companies and entities, through research and technological processes.	 www.leitat.org	       
LLET NOSTRA		Llet Nostra Alimentària, SL, a company dedicated to dairy farming based in Barcelona. It sells milk under the motto "the milk of Catalan cooperatives". Les granges de Llet Nostra són petites i mitjanes explotacions ramaderes d'unes 200 vaques de mitjana que treballen sota criteris de producció sostenible i benestar animal. Un projecte ramader que és líder en el mercat de llet bàsica a Catalunya, aglutinant més del 25% dels ramaders de Catalunya.	 www.lletnostra.cat	
MAiMA		MAiMA is a research group from the University of Barcelona that applies the latest technology in stable isotope analysis, mineralogy and geochemistry for environmental pollution, food authentication and mineral durability studies	 www.ub.edu/maima	














Company	Logo	Description	Contact	Use Cases
MARTEEN SPORTS WORLD		MSW is specialized in the manufacturing and commercialization of waxes for sport activities; Snow, water, sand or team activities.	 www.marteensports.com	
MILLOR ENERGY SOLUTIONS		High-tech company specialized in the design, development and manufacturing of class battery packs for hybrid and electric vehicles in medium series productions with very high added value, based on its Smart BMS.	 www.millorbattery.com	
MOBA-ISE MOBILE AUTOMATION		MOBA Mobile Automation experts in automation since 1972. Leaders in pioneering technology, applications & software related to the construction and environmental sectors.	 MOBA Group Website MOBA Spain Website Moba-ise@moba.de MOBA Community - Facebook - LinkedIn - Twitter - Youtube	 
MOSAIC FACTOR		Mosaic Factor develops data driven solutions for sustainable Mobility of People and Goods in cooperation with partners from all over Europe.	 www.mosaic.com	













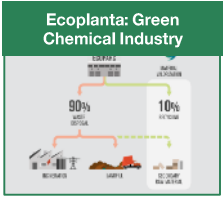

Company	Logo	Description	Contact	Use Cases
MURIA		New line of organic candy with a 100% compostable packaging, to avoid any waste and impact to the environment.	 www.mielmuri.com	<div>100% compostable packaging for sweets</div> 
NATURGY		Its objective is to serve society and offer intelligent and innovative solutions, betting on the technological vanguard. Naturgy is the first group to integrate gas and electricity in Spain.	 www.naturgy.es	<div>Catalyst Development for Synthetic Natural Gas Production</div> 
NEURITE LAB S.L.		Neurite provides software solutions to transform the continuously growing available data into useful knowledge to assist in decision-making processes within the retail, environment and smart cities sectors.	 www.neuritelab.com	<div>Customized Applications For Environmental Uses, Based In Artificial Intelligence</div> 
Nordvert Sorigué		Dynamic group of leading companies in the technology and water engineering, services, construction and materials sector with a clear commitment to innovate and improve society.	 www.sorigue.com	<div>Deodorization of rigid plastic packaging waste to promote its recycling and reuse</div> 




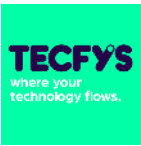

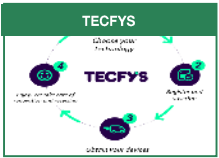






Company	Logo	Description	Contact	Use Cases
OIMO		OIMO is an Eco-Design and New Materials Start Up specialised in the development, creation, testing and implementation of Sustainable Marine Degradable Packaging.	 http://oimo.co/	
PASQUAL ARNELLA		Pasqual Arnella are manufacturers of sustainable mannequins and visual merchandising made out of recycled paper paste. The company was founded in Barcelona in 1892 and all their products meet all the sustainability standards, embracing the circular economy from the design to the packing process.	 www.pasqualarnella.com	
PICVISA		PICVISA is an innovating technology company that provides industrial solutions based on image processing and machine vision. We design, develop and produce selection and sorting equipment for recycling materials	 www.picvisa.com	   
POTS		POTS has developed a digital and logistical platform for the food and drugstore sectors to integrate their container systems and contribute to the reuse in the packaging and distribution processes, facilitating a circular solution to mass consumption products' waste.	 www.pots.eco	
PROQUIMIA		Manufacture and marketing of chemical specialties. products designed to be used safely and effectively, guaranteeing a sustainable future thanks to the utmost care for environmental impact.	 www.proquimia.com	

Company	Logo	Description	Contact	Use Cases
PROTON NEW ENERGY FUTURE		The mission is accelerate the energy transition towards energy through the development of innovative solutions in the fields of biotechnology, nanotechnology and photochemistry. Providing adapted solutions	 www.protonfuture.com/	
RECICLAJES SAN ADRIÁN		RECICLAJES SAN ADRIAN SL is a specialist in the Recovery of Slag from Municipal Waste Energy Recovery Plants, Metallurgy Plants and the Integrated Management of Industrial Waste. They optimize the management of the waste received, to find the best solution for its recovery, processing and disposal.	 www.reciclalessanadrian.com	
RIMSA METAL TECHNOLOGY		Rimsa Metal Technology provides additives of high added value. The company's steel and polymeric fibers solutions guarantees improvement of flexural strength, toughness characteristics and control cracking for different industrial markets.	 www.rimsa.com	
ROMERO POLO		Romero Polo is a family business group founded in 1984. The company brings together various activities related to the construction sector, offering a comprehensive work and maintenance service to both public and private organizations, and to the services sector.	 www.romeropol.com	
Sant Feliu de Llobregat Municipality		Municipality of Sant Feliu de Llobregat	 www.santfeliu.cat	















Company	Logo	Description	Contact	Use Cases
SANTOS JORGE		Santos Jorge, S.A. carries out all sort of activities related to waste management and the environment and offers urban and industrial services.	 www.santosjorge.com	 
SAT84 EXPLOTACIÓ AGRÀRIA LA ROVIRA		SAT84 is a farming project dedicated to bovine and porcine activities.	 www.sat84cat.com	 
SATURAS		Founded in 2013 by Dr Moshe Meron and Ms. Anat Halgoa-Solomon Today- 20 employees – Including agronomists, engineers, technicians and mathematician Raised 9 million dollars from private investors & governmental grants.	 www.saturas-ag.com/	 
SAULEDA		Business group manufacturer of technical fabrics for sun protection, nautical, outdoor upholstery and industry, with more than 100 years of experience. Since Sauleda was born in 1897, it has had one goal: to produce high quality and design fabrics to protect people.	 www.sauleda.com	 







Company	Logo	Description	Contact	Use Cases
SEAT		SEAT is one of the world largest manufacturer of automobiles. SEAT, S.A. are located at SEAT's industrial complex in Martorell near Barcelona. In 2020, annual production was above the 468.000 units, with more than 427.000 cars sold in just one year, exported to over 75 countries worldwide.	 www.seat.es	<div> <div>Converting organic waste into biomethane</div>  </div> <div> <div>Recycling Of Rice Waste For Automobile Industry</div>  </div>
SIARQ		Clean Tech for Climate company specialized in the design, production and implementation of solar urban infrastructures for Smart Cities that connect solutions through IoT.	 www.solarurbanhub.com	
SMART RESOURCES UPC		The aim of Smart Sustainable Resources Research Center is to create, innovate and transfer knowledge in the field of natural resources, and urban, industrial and mining waste, through technologies for the location, processing, optimization and reuse of these resources.	 www.smartresources.upc.edu	
SOM MOBILITAT		Som Mobilitat is a community-driven cooperative for promoting sustainable transport.	 www.sommobilitat.coop	<div>Carsharing electric between citizens, companies and administrations</div> 

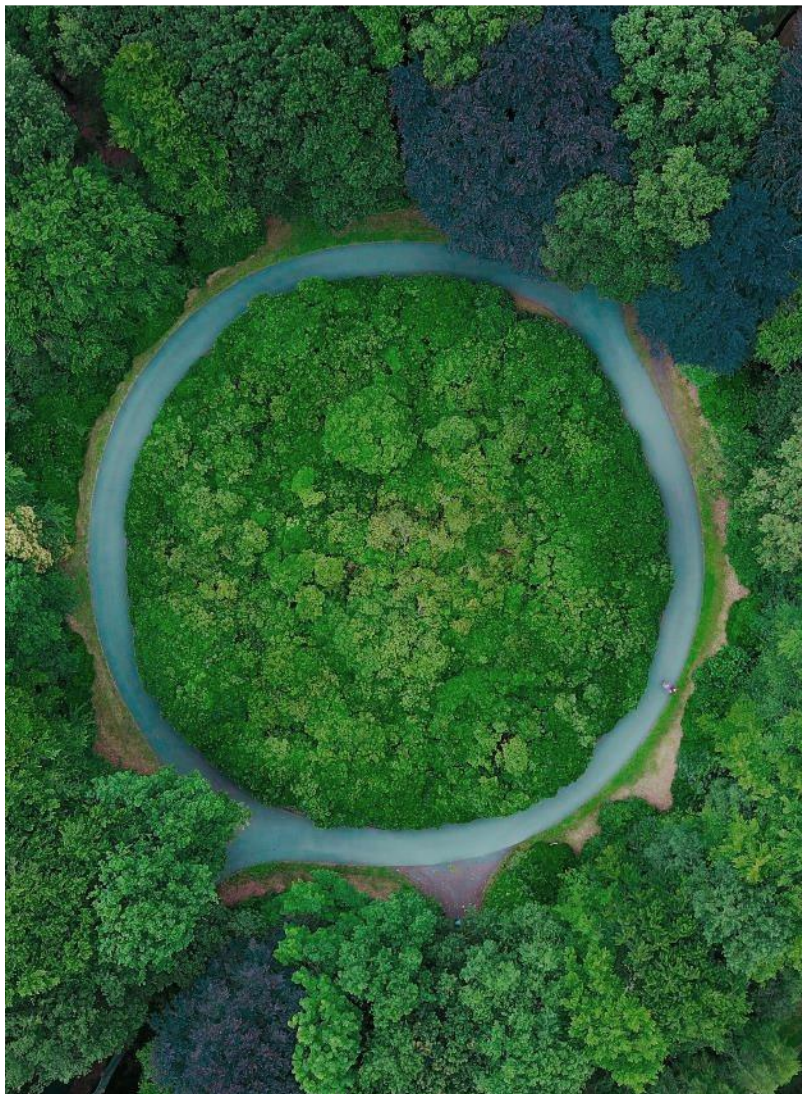
Company	Logo	Description	Contact	Use Cases
SORBO MJV		Sorbos is the first edible, flavored and 100% biodegradable straw in the world. Follow us in the ecotasting movement.	 wearesorbos.com	
SORIGUÉ – ACSA GROUP		Dynamic group of leading companies in the technology and water engineering, services, construction and materials sector with a clear commitment to innovate and improve society.	 www.sorigue.com	 
SUD ENERGIES RENOVABLES		SUD Renovables is an independent group based in Vic that has a proven experience in the industrial, energy and environmental sector and offers comprehensive services in the field of engineering, construction and exploitation of renewable energy	 www.sud.es	
SUEZ		SUEZ uses innovation and collaboration to develop smart and sustainable resource management solutions: optimizing the way water is used thanks to information technologies, creating alternative water resources and recovering energy or new materials from waste.	 http://www.suez.es/	 

Company	Logo	Description	Contact	Use Cases
TAPP WATER		We are a Barcelona-based company that develops convenient, sustainable and affordable plug & play water filters. Our ultimate mission is to empower people to easily get clean and healthy water from tap, with a minimum environmental impact.	 www.tappwater.co	
TECFYS		New technological startup that foster a new connection between technology and people. The solution based on circular economy principles was designed with the aim of managing the end-to-end life cycle of technology by a monthly subscription.	 www.tecfys.com	
TECNOCAMPUS		The Tecnocampus Mataró-Maresme Foundation is a non-profit organization promoted by the Mataró City Council and the Maresme County Council to manage and develop university studies and the TecnoCampus business and entrepreneurship park	 www.tecnocampus.cat/	
TEQMA		Experts in innovative technological applications to improve water quality and the environment. The company is made up of technicians from Industrial Engineering, Chemical Engineering and Biology with extensive and extensive experience in processes of adaptation, reduction and reuse of effluents.	 http://www.teqma.com	

Company	Logo	Description	Contact	Use Cases
THERMOWASTE		They provide an effective solution to the problem of municipal waste. We recover 100% of the materials contained in the garbage without prior classification or selective collection.	 www.thermowaste.com	
TOO GOOD TO GO		Social Impact company fighting food waste across Europe and in New York through an app that connects customers with food businesses that have unsold surplus food at the end of the day and sell it at a reduced price to prevent it from going to waste.	 www.toogoodtogo.es/	
TORRES		The company remains firm in its environmental commitment, investing in the Torres & Earth program that it launched in 2008 to minimize the effects of climate change.	 www.torres.es/es/torres-and-earth-entrada	
UNIÓ NUTS		Unió nuts is a leading nuts cooperative, specializing in almonds, hazelnuts and carob pods which take part of an entity of 186 cooperative which goal is improving living conditions for farmers and encouraging rural development.	 www.unio-nuts.coop	

Company	Logo	Description	Contact	Use Cases
UPC – UNIVERSITAT POLITÈCNICA DE CATALUNYA		The Universitat Politècnica de Catalunya is a public university of research and higher education, is an agent and engine of economic and social change, valuing research and transferring their knowledge and technology to society.	 www.upc.edu	 
VALLÈS CIRCULAR		Territorial initiative shared between administrations, social, environmental and economic agents with the aim of promoting the circular economy in the Vallès Occidental	 http://vallescircular.com/	 
VENVIROTECH		VENvirotech is a biotechnology start-up dedicated to the transformation of organic waste into polyhydroxyalkanoate (PHA) bioplastics by bacteria which are biodegradable in the environment and compatible with the human body.	 www.venvirotech.com	
VERITAS		Veritas is the first supermarket in Europe to generate a positive impact on society and the environment. This is confirmed by the international BCorp certification, which recognizes good practices and compliance with high standards of transparency and accountability.	 www.veritas.es	

Company	Logo	Description	Contact	Use Cases
VERTISOL INTERNACIONAL SRL		Technical fabrics for window covering industry, wall and floor covering and upholstery. Focused on healthy fabrics. All of our products are manufactured in EU with all the certifications required.	 www.vertisol.com/es	
VOTTUN		Vottun is traceability platform focusing on using blockchain technology to improve the way the certified data can be used in the economy circular processes.	 www.vottun.com	
WATER, ENVIRONMENT AND BUSINESS FOR DEVELOPMENT (WE&B)		WE&B is a consulting company focused on the Water and Environment sectors, offering services in Social and Business Innovation.	 www.weandb.org	
WORLDSENSING		Worldsensing is a widely recognized global Internet-of-Things pioneer. We digitize the monitoring systems of critical infrastructure for a more resilient world.	 www.worldsensing.com	



LEADING CIRCULAR ECONOMY SOLUTIONS IN CATALONIA

ACCIÓ
Catalonia  Trade & Investment



Generalitat de Catalunya
Government of Catalonia