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CIRC-FOOD

Company
ATT Impresa Sociale

Country
Italy

Circular Business Model
Circular supply chain

Sector
Agri-food

Inclusive and Circular Catering Services

Challenge

- **Reduce catering's environmental impact** while supporting inclusive employment
- **Improve delivery** and packaging sustainability
- **Ensure financial viability** and year-round operations

Solution

- Developed a **circular catering business plan**
- Assessed **cargo-bike deliveries** and **sustainable packaging**
- Explored catering beyond the school calendar
- Evaluated scalability and **financial viability**

Impact

- **20** educational **institutions assessed**
- **~70 active collaborators** involved
- **100%** of planned **deliverables completed**
- **Expansion potential** identified in Lombardy and Emilia-Romagna

Key takeaway

Circular catering can combine inclusive employment with **lower-impact logistics** and packaging through a **scalable business model**.

SCAN ME!
Learn more about this project

A business plan mapped out how sustainable deliveries, responsible packaging, and inclusive employment could support catering growth.



Rethinking Utilisation

Company
RURALIS SRL SB

Country
Italy

Circular Business Model
Sharing Economy

Sector
Proximity & Social economy

Building Circularity into Rural Hospitality

Challenge

- Applying circularity across a **fragmented rural hospitality** network
- **Limited control** over properties, products, and supply chains
- **Need for local**, service-based **circular solutions**

Solution

- Created **tailored waste management** and composting plans
- Established **local repair networks** with artisans
- Introduced maintenance and **furniture regeneration** protocols
- **Trained owners** and **staff in circular practices**

Impact

- **20–25% less waste** per property
- **~20% lower CO_2 emissions** through longer asset lifespans
- **15% savings** in annual replacement costs
- **100% participation** across **10 properties**
- **40% increase** in environmental **awareness**

Key takeaway

Local partnerships, maintenance, and training can make **circularity work across decentralised rural hospitality**.

SCAN ME!
Learn more about this project

Local repair, composting, and training helped rural properties reduce waste and costs while strengthening community value.



Back to New(s)

Company	Country	Circular Business Model	Sector
Embawo	Italy	Product life extension	Textiles

Extending the Life of Handcrafted Handbags

Challenge

- **High use of virgin materials** and production waste
- **Repair services** were **underused** and unstructured
- **No system for material recovery** or product take-back

Solution

- Developed a **Circular Hub for repair, regeneration, and co-design**
- **Recovered materials from used handbags** for new products
- Introduced a **return-and-voucher scheme**
- Combined craftsmanship with **digital production** tools

Impact

- Up to **20% less virgin material** used in 3 years
- Up to **80% reduction** in **production waste**
- **14.5 kg CO_2 saved** per **regenerated handbag**
- **1.3–2.0 t CO_2 saved annually** during the pilot
- Created **new jobs** and **revenue** from regenerated products

Key takeaway

Repair, regeneration, and **co-design** can **extend product life** while reducing waste and creating new business opportunities.

SCAN ME!

Learn more about this project

A circular hub combines repair, material recovery, and co-design to reduce waste and create longer-lasting fashion products.



Company **Agreenet** | Country **Italy** | Circular Business Model **Product life extension** | Sector **Agri-food**

Extending Fresh Produce Shelf Life Naturally

Challenge

- Fresh produce loses 5–10% to spoilage
- **Shelf life is limited**, especially in long-distance transport
- **Existing preservation** methods are **costly** or complex

Solution

- Developed PiFresc®, a **plant-based shelf-life extender**
- Placed directly **inside existing packaging**
- Slows fungal and bacterial growth without infrastructure changes
- Supports a **scalable**, service-oriented adoption **model**

Impact

- 10–12% **less food waste**
- **~50 t CO_2/year avoided** (medium-scale scenario)
- Up to **25–30% longer shelf life**
- ~4.5 kWh/year/m³ **energy savings**
- Fewer rejected shipments and better inventory management

Key takeaway

Extending shelf life with simple, **plant-based technology** can reduce waste and improve efficiency across the fresh food supply chain.

SCAN ME!

Learn more about this project

A plant-based device extended fruit and vegetable shelf life by up to 30%, reducing food waste, energy use, and emissions.



Felfil as a service

Company
FELFIL SRL

Country
Italy

Circular Business Model
Product as a service

Sector
Digital

Reducing plastic waste in 3D printing

Challenge

- **High cost of recycling** machines for private users
- Complex logistics for sharing equipment
- **No accessible rental model** for 3D recycling systems
- **High plastic waste** from 3D printing

Solution

- Launched **Felfil as a Service (FaaS)** rental model
- Validated demand through user surveys
- Improved durability and **reusable packaging**
- Built website and rental agreement

Impact

- **60 users/year** via 5 shared units
- Up to **15 kg plastic recycled** per 15-day rental
- **90% reduction** in new machine production
- **~42 kg CO_2/year** per unit lifecycle

Key takeaway

A service-based circular model can make recycling **tech accessible, scalable, and environmentally impactful**.

SCAN ME!

Learn more about this project

A rental-based recycling service that makes 3D printing more circular by turning plastic waste into reusable filament in an affordable and accessible way.



NANDO

Company
RE-LEARN

Country
Italy

Circular Business Model
Product as a service

Sector
Digital

AI-Powered Smart Waste Collection

Challenge

- Waste collection relied on fixed routes and **manual monitoring**
- Contamination was detected too late, causing **rejected recycling loads**
- Unnecessary trips **increased costs, fuel use,** and **CO_2 emissions**
- Municipalities **lacked real-time visibility** on waste quality and volumes

Solution

- Developed NANDO.Sentinel, an **AI computer-vision system** on collection trucks
- **Monitored waste quality**, quantity, and illegal dumping in real time
- **Optimised routes** using fill levels, vehicle capacity, and historical data
- **Centralised all data** in a dashboard and enabled future PAYT pricing models

Impact

- **Reduced** kilometers traveled, **fuel consumption**, and **CO_2 emissions**
- **Increased recycling rates** through targeted interventions
- **Improved urban cleanliness** by detecting illegal dumping
- Enabled **data-driven planning** and environmental reporting

Key takeaway

Real-time waste data can improve recycling quality, reduce costs, and make urban **waste collection more efficient.**

SCAN ME!

Learn more about this project

AI-equipped collection trucks provide real-time waste data, helping cities optimize routes, improve recycling, and reduce emissions.

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AGRO-BLOCK

Company
Pedone Working srl

Country
Italy

Circular Business Model
Recovery and recycling

Sector
Construction

Agricultural Residues for Circular Construction

Challenge

- Construction **needs lower-carbon, bio-based materials**
- Agricultural residues like **rice husks and miscanthus remain underused**
- **Dependence on imported raw materials** increases environmental impact

Solution

- **Developed bio-based building blocks** using hemp, rice husks and miscanthus
- **Used a low-energy process** compatible with existing production lines
- Validated mechanical, thermal, acoustic, durability and fire performance
- **Designed for potential recycling** and **reuse** at end of life

Impact

- Validated **industrial-scale prototype** production
- **Reduced reliance on virgin** and imported **materials**
- **Strengthened local agricultural** and **construction supply chains**
- Promising thermal and acoustic insulation performance

Key takeaway

Local agricultural residues can become scalable, **high-performance building materials** while reducing reliance on virgin resources.

SCAN ME!

Learn more about this project

Rice husks and miscanthus were successfully incorporated into bio-based building blocks using existing industrial processes.

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Recycling Sicily Cork

Company
SARCO SRL

Country
Italy

Circular Business Model
Recovery and recycling

Sector
Agri-food

AI Unlocks the Value of Waste Cork

Challenge

- Used cork stoppers are mostly landfilled due to **poor sorting technology**
- Natural and synthetic stoppers are **difficult to distinguish**
- Around **15 tonnes/year of cork waste** were sent to landfill

Solution

- Developed an **AI-powered** optical **sorting system**
- Separated natural cork from mixed waste and synthetic stoppers
- Recovered cork and **transformed** it **into industrial-grade granules**
- Built a modular and **scalable sorting prototype**

Impact

- **1,786 kg** of **cork recovered**
- **237 kg CO_2e saved**
- **~ €250 saved per tonne diverted** from landfill
- 2 permanent **jobs created**
- **Potential to scale** to other waste treatment facilities

Key takeaway

AI-based sorting can unlock previously unrecyclable waste streams and create **new material value**.

SCAN ME!

Learn more about this project

AI sorting enabled cork recovery from mixed waste, reducing landfill disposal while creating new material and economic value.



Closing The Circle

Company
PlantaRei Biotech S.r.l.

Country
Italy

Circular Business Model
Recovery and recycling

Sector
Health

From Production Waste to Natural Ingredients

Challenge

- **55–60 tonnes/year of watery production residue** at full capacity
- **Up to €30,000/year** spent on **waste disposal**
- **Valuable vegetable oils** remained **unused**

Solution

- Developed **solvent-free spray-drying process**
- **Recovered** over **90%** of the **residue**
- Created **natural ingredient for shampoos, shower gels**, and fabric **softeners**
- Two companies began testing the ingredient

Impact

- **~91% reduction** in waste-related **emissions**
- Up to **€30,000/year** in **disposal costs avoided**
- **5–7 tonnes/year** of **new ingredient** produced
- Potential **customer savings** of **1–2.6 tonnes CO_2e/year**

Key takeaway

A simple, solvent-free process can **transform production residue into a valuable ingredient** while reducing emissions and costs.

SCAN ME!

Learn more about this project

A vegetable-oil-rich residue was transformed into a natural ingredient for personal care and household products.



RE.S.T.O.RE

Company: A.D.A. S.r.l.

Country: Italy

Circular Business Model: Recovery and recycling

Sector: Health

Circular Practices for Sustainable Pharmaceutical R&D

Challenge

- **High material** and **solvent waste** in pharmaceutical R&D
- Need to **maintain product quality** while **reducing resource use**
- **High carbon footprint** of traditional inhalers

Solution

- **Recovered** and **reused active ingredients** (APIs) and solvents
- Evaluated **greener solvents** and microfluidics
- Explored dry powder inhalers (DPIs) as a **lower-carbon alternative**
- **75%** of **APIs recovered**

Impact

- **68%** of **solvents recycled**
- **73% reduction** in synthesis **solvent waste**
- **45 L** of **non-green solvents recovered** or **saved**
- **~96% lower CO_2 emissions** potential with DPIs
- €6,730 in material **savings** over six months

Key takeaway

Circular practices in pharmaceutical R&D can significantly reduce waste, emissions, and costs while supporting **more sustainable drug development.**

SCAN ME!

Learn more about this project

Resource recovery and greener inhaler technologies reduced laboratory waste while delivering measurable environmental and economic benefits.



Double-Up

Company
PLASTIZ

Country
Italy

Circular Business Model
Recovery and recycling

Sector
Creative & Cultural Industries

Circular Design Panels from Recycled Plastic Waste

Challenge

- Massive global **plastic waste** with low recycling rates
- Furniture industry depended on **non-renewable materials**
- Needed scalable uses for post-consumer plastic waste

Solution

- Converted plastic waste into **durable design panels**
- Used thermoforming process for **large-format recycled materials**
- Embedded ~15 kg of plastic waste per m² of panels
- Developed custom machinery for **circular plastic processing**

Impact

- **20,000+ kg plastic waste recycled** in 3 years
- **35,000 kg petrol saved**
- **50% lower greenhouse gas emissions** vs virgin plastic
- **Used** in 27 **retail spaces**, 2 **exhibitions**, and 1 **office**

Key takeaway

Plastic waste can be transformed into **durable design materials with lower emissions and high-value applications** in architecture and furniture.

SCAN ME!

Learn more about this project

Recycled plastic waste was repurposed into large-format materials used in retail, hospitality, and interior design projects.



Sail4Up

Company: **Junkle**

Country: **Italy**

Circular Business Model: **Recovery and recycling**

Sector: **Textiles**

From Sails to Circular Fashion

Challenge

- Valuable sail and nautical materials were reaching end of life without **recovery systems**
- Fashion brands needed more circular sourcing and less **reliance on virgin materials**
- **Lack of traceability** and structured collection processes

Solution

- Developed **SailForward**, a digital platform for material collection and tracking
- Created a structured **recovery system for sail and nautical materials**
- Integrated recovered materials into **fashion production**
- **Improved traceability** and circular sourcing processes

Impact

- Established a **production-ready recovery** and **management system**
- **Increased** the use of **secondary raw materials** in fashion products
- **Improved circularity** performance across operations
- Created a **scalable** and **replicable model** for fashion SMEs

Key takeaway

Digital traceability and **material recovery** can help transform industrial waste streams into **circular fashion resources.**

SCAN ME!

Learn more about this project

A digital recovery platform helped transform end-of-life nautical materials into valuable inputs for fashion production.

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SIRCLE

Company
Sinergy Flow S.r.l.

Country
Italy

Circular Business Model
Recovery and recycling

Sector
Renewable Energy

Sulfur Waste for Circular Energy Storage

Challenge

- Industrial **sulfur by-products** were **underused**
- **Needed consistent quality** for battery electrolyte production
- **Reduce reliance on critical raw materials** and volatile supply chains

Solution

- **Reused industrial sulfur waste** in **redox** flow **batteries**
- Validated **performance comparable to conventional materials**
- Identified lower-impact sulfur purification processes
- Developed **local sourcing partnerships** with industrial suppliers

Impact

- **Reduced dependence on virgin** and **critical raw materials**
- Potential **reductions** in **processing energy** and **CO_2 emissions**
- Established basis for **commercial deployment**
- Developing an 8-hour grid-scale battery pilot

Key takeaway

Industrial sulfur waste can become a **valuable resource** for circular, long-duration **energy storage.**

SCAN ME!

Learn more about this project

Industrial sulfur by-products were validated as a feedstock for redox flow batteries, supporting more resilient renewable energy storage.

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Biova Flour

Company: **Biova**

Country: **Italy**

Circular Business Model: **Recovery and recycling**

Sector: **Agri-food**

From Bread Waste to Circular Flour

Challenge

- Large amounts of **surplus bread** were **wasted** or downcycled
- Manufacturers relied entirely on **virgin wheat flour**
- Needed a safe and profitable **way to reuse bread** at industrial scale

Solution

- Converted bread crusts into food-grade **Ri-Flour**
- Used **industrial drying** and micronization processes
- Reintroduced the flour into production lines
- Validated a plant processing 50 t/day and **producing 16,000+ t/year of circular flour**

Impact

- **18,000 t/year** of food **waste avoided**
- **30% circular input** replacing virgin flour
- **30–50% lower CO_2 emissions** vs conventional flour
- **Reduced raw material costs**
- Circular model validated with **ROI within 5 years**

Key takeaway

Industrial bakery waste can be transformed into a **valuable food ingredient**, reducing waste, emissions, and raw material costs.

SCAN ME!

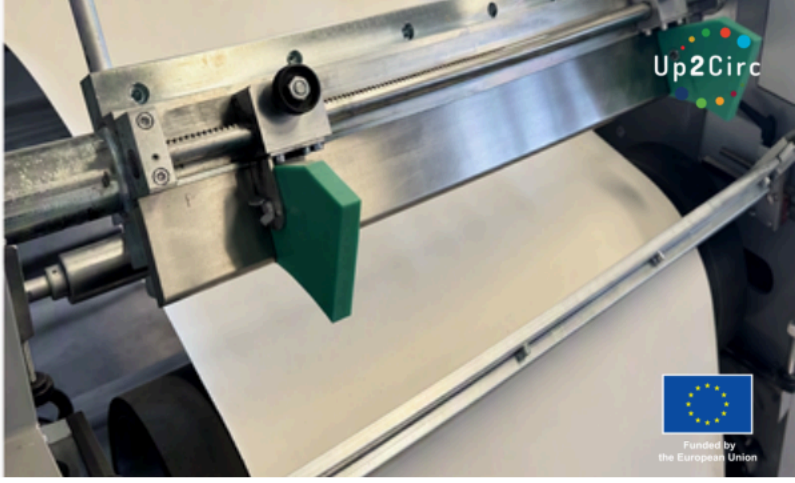
Learn more about this project

Surplus bread was transformed into food-grade flour and returned to production, avoiding thousands of tonnes of waste each year.

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POLYLAYER



Company
Vegea S.r.l.

Country
Italy

Circular Business Model
Recovery and recycling

Sector
Textiles

Circular Recycling of Coated Textiles

Challenge

- Coated textiles were **difficult to recycle** due to bonded material layers
- Recycling often required solvents or resulted in **incineration**
- Needed to preserve **material durability** and **quality**

Solution

- Developed a **bio-based TPU layer** for easier separation
- Introduced solvent-free heat and **mechanical recycling**
- Recovered TPU and textile backing for **reuse**
- Scaled the process from lab to **pilot production**
- **100% elimination** of **solvents**

Impact

- Up to **76% recycling rate**
- **34% lower energy** consumption
- **52% less waste** generated
- **42% lower greenhouse** gas **emissions** intensity
- Delivered 92 hours of **circular economy training**
- Retained at least **88%** of **key properties** after 3 recycling cycles

Key takeaway

Designing coated textiles for disassembly enables **solvent-free recycling and repeated material reuse** without compromising performance.

SCAN ME!

Learn more about this project

A recyclable TPU layer enabled material recovery and reuse across three cycles while significantly reducing waste, energy use, and emissions.

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GREENPRINT

Company
Isuschem Srl

Country
Italy

Circular Business Model
Recovery and recycling

Sector
Energy Intensive Industries

Waste-Derived Bio-Solvents for Sustainable Printing

Challenge

- Printing relied heavily on **fossil-based solvents**
- Waste oils remained an **underused resource**
- Needed **sustainable alternatives** without compromising performance or compliance

Solution

- Developed **RenewInk 5000** using waste oils
- Created **bio-based solvents** for inks and varnishes
- Validated performance, formulation stability, and **regulatory compliance**
- Used **life-cycle assessment** to guide formulation choices

Impact

- **Improved 16** of 18 **environmental impact categories**
- **Reduced dependence** on virgin fossil **resources**
- **Created value** from waste oils
- Supported more **sustainable printing inks** and varnishes

Key takeaway

Waste oils can replace fossil-based raw materials in printing through high-performance, lower-impact bio-based solvents.

SCAN ME!

Learn more about this project

Waste oils were converted into bio-based solvents, improving the environmental performance of printing inks and varnishes.



E-BIOPOND

Company: **Algaria Srl**

Country: **Italy**

Circular Business Model: **Recovery and recycling**

Sector: **Agri-food**

Circular Spirulina Production Through Water and Nutrient Recovery

Challenge

- Spent cultivation media and food-industry **waste contained valuable water and nutrients**
- Variable waste composition made **reuse difficult**
- Needed to **maintain Spirulina productivity** while **reducing resource use**

Solution

- Integrated E-BIOPOND bioelectrochemical filters
- Treated wastewater to **recover nutrients**
- **Reused treated water** and nutrients in Spirulina cultivation
- Developed **procedures** for **process optimisation** and **scale-up**

Impact

- **70–90% reduction** in **organic pollution** (COD)
- Up to **80% nitrogen conversion**
- **50–60%** cultivation **water reused**
- Up to **80% reduction in mineral fertiliser** needs
- **Maintained** conventional Spirulina **productivity**

Key takeaway

Circular water and nutrient recovery can make **Spirulina production more resource-efficient** without compromising productivity.

SCAN ME!

Learn more about this project

Bioelectrochemical filtration enabled the reuse of water and nutrients from production waste, reducing resource and fertiliser needs.



Eggshellent

Company: **Alchim SC**

Country: **Italy**

Circular Business Model: **Recovery and recycling**

Sector: **Agri-food**

Eggshell Waste for Sustainable Egg Packaging

Challenge

- **Conventional egg packaging** relies on **cellulose and plastic**
- **Large volumes of eggshell waste** remain underused
- Needed biodegradable, food-safe, high-performance packaging

Solution

- Developed **egg trays from eggshell powder** and recycled cellulose
- Optimised material strength and **recyclability**
- Tested **food safety** and **biodegradability**
- Filed a provisional patent
- **Comparable strength** and tear resistance to standard trays

Impact

- **20% less virgin cellulose** used
- **43%** of local **eggshell waste redirected** from composting
- **20%** estimated **CO_2** emissions **reduction**
- **Strong interest** from **egg producers** and **packaging distributors**

Key takeaway

Eggshell waste can replace virgin materials in sustainable, high-performance **packaging.**

SCAN ME!

Learn more about this project

Recycled eggshells and paper fibres were combined to create biodegradable egg trays with lower material use and emissions.