



What is a Circular Economy?

Circular Economy: the basics

The term circular economy refers to an economic system which is based on the reuse and regeneration of materials or products. At its heart, a circular economy aims to extend the lifespan of a product, which means designing products to last.

Every year, each European citizen consumes 14 tonnes of raw materials and produces 5 tonnes of waste. This is a result of the current linear economic system, where products are designed to be made, used, and then thrown away. Linear economies focus on short-term consumption and convenience, using huge amounts of finite resources and producing even greater quantities of waste. On a global scale, this means all countries consume unsustainably, depleting natural resources and generating overwhelming amounts of waste. A circular economy would replace this 'take, make, waste' approach with a 'reduce, reuse, recycle, repurpose' system, extending the lifespan of a product and reducing the need for replacement.

A **circular economy** isn't just a more sustainable business model, it **benefits everyone**, here are just a few examples of how:

- **The Planet:** conserves natural resources, reduces waste and energy demand, in turn mitigating climate change and regenerating the environment and biodiversity.
- **The Economy:** creates new jobs, reduces costs and increases business resilience by reducing dependency on sourcing finite raw materials.
- **The People:** encourages sharing and fairer distribution of resources, stimulates innovation and benefits communities that rely on natural resources.

In principle and in practice

The core principles of circular economy are: to eliminate waste and pollution, circulate products and materials and regenerate nature. In practical terms this could be using recycled materials to make a product, rather than new, raw materials. It also places a larger emphasis on repairing, refurbishing and renewing products, rather than disposing of items when they become damaged or worn. At a smaller scale this could be reusing food containers, buying second-hand clothes or using a reusable bag made from recycled materials.

A circular economy begins at the very start, designing products to last. By designing products made from sustainable or recycled materials, the demand for raw materials is reduced. Additionally, products are designed to minimise waste, by making products that can be repaired, maintained and refurbished.

The next stages include production, manufacture and distribution, which can be improved by using sustainable means of transport, clean energy and eco-friendly packaging. Once in the hands of the user, repairing and renewing items before looking to replace them. Once a product has reached the end of its current lifecycle, effective collection methods ensure that the product is either recycled, repurposed or refurbished or, where unavoidable, disposed of efficiently. A circular economy weaves sustainability into all stages of a product or material's lifecycle: the production, distribution, consumption, collection and recycling (or remanufacture). Underpinning all of this is collaboration and innovation, between policymakers, manufacturers and consumers (that means everyone).



SEARCULAR economy in action

In March 2020, the European Commission adopted a new circular economy action plan, to reduce pressure on natural resources and create sustainable growth and jobs. This plan also formulates a key part of the European Green Deal which aims to make Europe carbon neutral by 2050. SEARCULAR's contributions support European policy needs, boost global circular economy, support an ecosystem approach to fishery management, and contribute to the UN Sustainable Development Goals by protecting biodiversity in the oceans, fostering a circular economy and supporting sustainable fishing. The project **aims to implement circular economy practices within the fishing sector**, and in doing so support its key objectives of reducing waste in the fishing industry and reducing marine litter and microplastics generated by European fisheries.

SEARCULAR's work is split into **four key solutions**, each uniquely encompassing the core principles of circular economy. Three solutions aim to reduce pollution from fishing gear when in use, trialling innovative new materials and gear design to reduce microplastic pollution, while the fourth solution aims to reduce waste in the fishing sector by supporting collection, management and reuse of worn out, end of life gear at ports.

Each of SEARCULAR's solutions embody multiple aspects of the circular economy to have the maximum positive impact on the environment, and the people who depend on it. By collaborating with fishermen, fishing gear manufacturers, scientists and researchers from across an EU stakeholder network, SEARCULAR will ensure the solutions work for the people they are intended for. From testing new ropes on working fishing vessels, to gathering feedback from a network of fishers, SEARCULAR is keeping the wheels turning on Europe's journey to becoming more sustainable.



Biodegradable dFAD model. Image credit: ISSF

By collecting and recycling discarded purse seine nets to manufacture **recycled dolly ropes**, this solution tackles two problems in one, creating value from a 'waste' end-of-life fishing gear to manufacture more durable dolly ropes from a new material. Designed to be more durable and last longer than their raw plastic counterparts, these recycled dolly ropes implement the core circular economy principles of adding value to waste, extending product life spans and repurposing materials in a loop.



By developing a **biodegradable coating** for demersal seine ropes, this solution reduces microplastic pollution. Traditional ropes can release substantial microplastics through abrasion when in use and are difficult to recycle due to the mixed materials used in the rope itself – a steel core with a plastic coating.



A new design of **biodegradable drifting Fish Aggregating Device** embodies the sustainable design principles of a circular economy. Unlike their existing plastic equivalents, these newly-designed devices are co-designed with fishers and are made from biodegradable, natural and toxin-free materials, reducing the accumulation of long-lasting plastics in sensitive marine areas. The materials used are also grown and harvested sustainably in the research area.



By creating **port-based solutions** that facilitate the collection, sorting and remanufacture of end-of-life fishing gear this solution supports the later stages of a product's lifecycle. Innovative 'Blue Points' simplify the collection process and reduce the quantities of fishing gear ending up in landfill or incinerators. The development of a plastic2plastic strategy supports reuse of a wider range of materials.



Comparison of new (right) and abraded (left) seine ropes. Image credit: SINTEF

WHAT IS A CIRCULAR ECONOMY?

SEARCULAR is working across 13 partners to extend the lifespan of a product, creating an economic system based on the reuse and regeneration of materials.



Designing products that are durable, repairable, and easy to maintain. Selecting materials and processes that minimise waste in production and supply chains.



Manufacturing using sustainable, recyclable and biodegradable materials and as little raw material as possible.
Processing materials in a way that minimises energy input and maximises product value.



Reuse of products to extend their lifespan and reduce the demand for new materials.
Repairing products instead of replacing them, extending the product's lifespan through upgrades and refurbishment.
Responsible consumption is encouraged, where sharing and leasing of products is commonplace.



Collection of materials is efficient and consistently enforced to ensure minimal quantities of waste entering landfill or being incinerated.
Recycling of all materials to be reintegrated back into the supply chain
Repurposing products that can't be recycled, to extend their lifespan.



Designing more durable seine ropes made from biodegradable materials.



Building eco-friendly fish aggregating devices using recycled materials.



Turning old nets into materials that can be used to make new dolly ropes.



Trialling new port-based solutions to improve the collection, disposal and recycling of old fishing gears.



SEARCULAR
Circular Solutions for Fishing Gears



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