



Circular economy in fisheries and aquaculture areas



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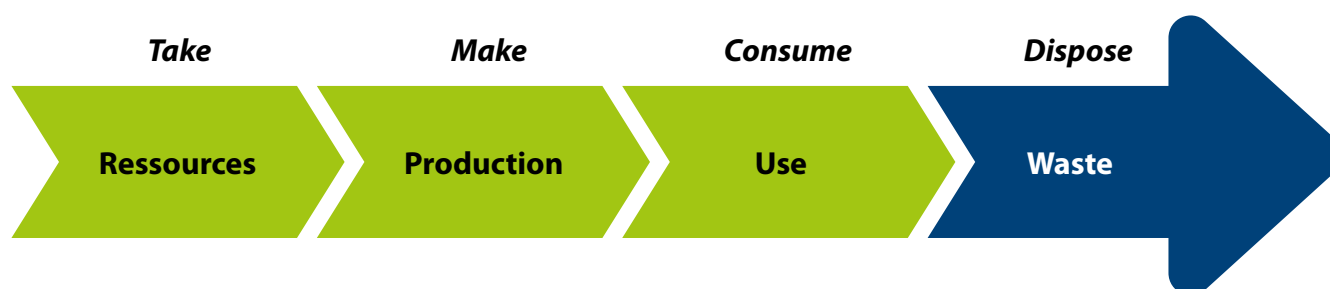
Table of content

Introduction	4
Chapter 1: Key concepts.....	6
1. Eco-design	6
Eco-proofing fisheries production systems	7
Reducing resource consumption, landfill and litter	8
Reducing energy consumption and carbon emissions	9
2. Turning production “waste” into a resource	12
Waste from fisheries production	13
Linking with other sectors.....	16
3. Making usage more circular	17
Sharing	17
Repairing	20
Reusing	21
4. Recycling of materials at the end of a product’s life	25
Marine litter.....	25
On land waste	30
Chapter 2: Putting the circular economy into practice	32
Factsheet 1. Analysing the area’s circular economy potential	32
Factsheet 2. Awareness-raising to change mindsets and behaviour	38
Factsheet 3. Building on ideas and fostering entrepreneurship	43
Factsheet 4. Building partnerships and industrial symbiosis	46
Factsheet 5. Rethinking business models and attracting investment	50

Introduction

Our current economic model is based heavily on the extraction of natural resources for products which are used by the consumer before, all too often, being thrown away. Different studies estimate that between 80 and 99% of products are no longer in use six months after being produced¹.

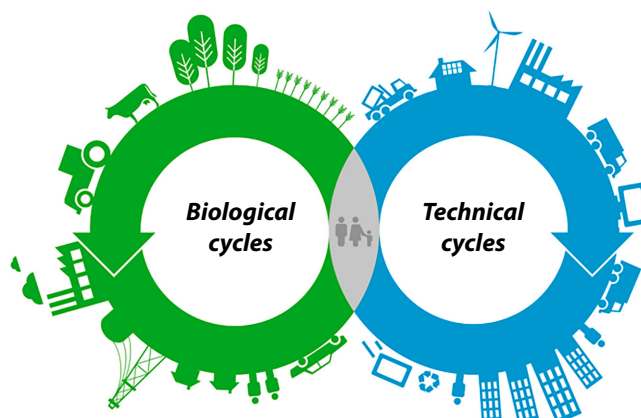
Traditional linear economic model



This model is wasteful and is consuming the world's natural resources at a faster rate than they can be regenerated. At the same time, it produces large amounts of pollution – from non-biodegradable materials such as plastics, to toxic liquids and greenhouse gases, known for their contribution to climate change.

The **circular economy** is a model of production and consumption which aims to move closer to the cyclical processes in nature whereby waste from one species is broken down, for example into nutrients, and used by another. It prioritises the use of renewable and sustainably sourced materials, facilitating their post-use composting to regenerate the natural systems we have tapped into. When it comes to the production of non-biodegradable products, such as machinery, it involves organising production to recuperate, reuse and recycle the parts and materials that went into those products².

Biological cycles include consumable materials, components and goods (such as fibres, foods, and most chemicals). Here, circular strategies include different forms of recycling (often called 'cascading' for consumable materials), as well as re-use and chemical or energy extraction. Biological cycles will eventually return materials safely back to the soil (as compost or soil amendments).



Source: [Partners for Innovation](#)

Technical cycles include durable materials, components and goods (such as plastics, glass, metals, components and machinery). Here, circular strategies include different forms of recycling for durable materials, and product-life-extension, such as re-use or reconditioning for durable components and goods. Technical cycles aim to maintain materials cycling around the economy, uncontaminated.

In this way, the circular economy moves away from this 'take-make-consume-dispose' model to one in which products and materials are maintained in circulation for as long as possible, waste and resource use are minimised, and when a product reaches the end of its life, it is used again to create further value.

¹ 80% according to Richard Girling's book, 'Rubbish!' (2005); 99% according to Leonard A. (2007). [Story of Stuff](#)

² This is the concept of "cradle to cradle", presented by McDonough and Braungart in their 2002 book: [Cradle to Cradle: Remaking the Way We Make Things](#)

In a circular economy, this approach is built into the product life cycle from the beginning, starting with the choice and quantities of materials used and the design of products that minimises their impact on the environment both during their production and use.

Underpinned by a transition to renewable energy sources, “economic growth” in a circular economy is decoupled from the constant consumption of finite resources. It places a higher value on quality and service rather than disposable goods and it involves sharing, repairing, reusing and recycling existing materials while encouraging the regeneration of natural systems.

In December 2015, the EU adopted a [circular economy package and action plan](#), envisaging actions, for example, to reduce food waste; legally recognise organic and waste-based fertilisers; foster eco-design for improved energy efficiency, reparability, durability and recyclability of products; and limit landfill to a maximum of 10% of municipal waste by 2030.

In January 2018, the European Commission adopted a further set of measures, including the [EU Strategy for Plastics in the Circular Economy](#) to transform the way plastics and plastic products are designed, produced, used and recycled. The Strategy also highlights the need for specific measures to reduce the impact of fishing gear and single-use plastics, particularly in our seas and oceans.

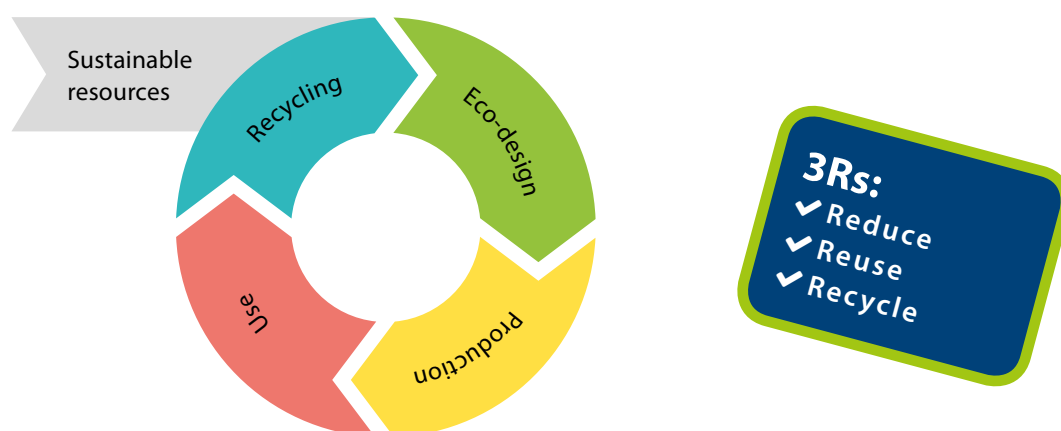
Fisheries and aquaculture contribute to the waste generated by society and FLAGs have a role to play in helping their communities’ transition towards a circular economy. This can bring many benefits – not only through more efficient use of their local resources, healthier aquatic eco-systems and more resilient economies – but also through opportunities to create more added value at the local level and new, skilled, jobs.

This guide aims to give Fisheries Local Action Groups (FLAGs) an introduction to some of the key concepts of the circular economy, while giving practical advice and examples of how they can encourage and support their communities to move towards more sustainable and circular production and consumption practices.

FLAGs can consider all stages of the fisheries and aquaculture supply chain and ask themselves where there is scope for re-thinking the design of production systems and products (**eco-design**); what to do with waste and by-products from fisheries/aquaculture (**production**); how equipment and products are used and maintained (**use**); and what happens with the materials from these products when they come to the end of their life (**recycling**).

These four stages of the product life cycle are explained in Chapter 1. Chapter 2 offers a series of five factsheets to help FLAGs turn these concepts into action.

Product life cycle in a circular economy





Chapter 1: Key concepts

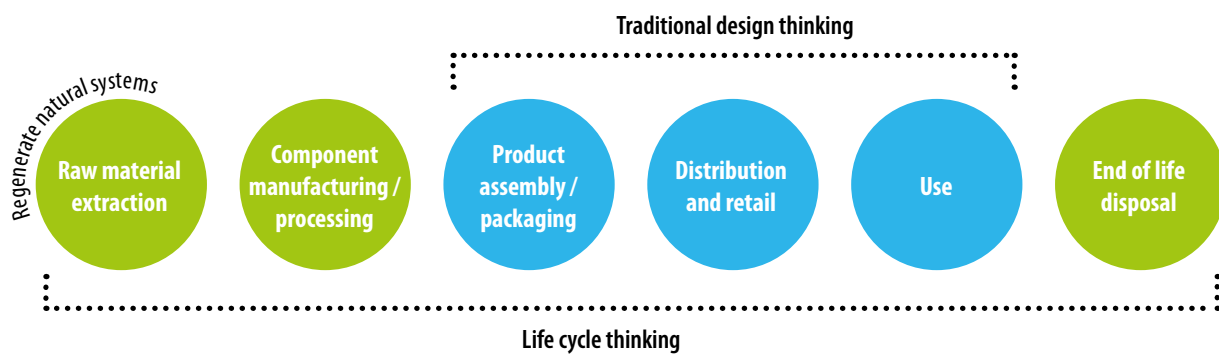
1. Eco-design



Eco-design is the first step to re-thinking what we produce, how we produce it and how the product or service will be distributed and used. It can impact all stages of the product life cycle starting with the materials used, to how long the final product will last, to the extent to which that product can be easily recycled.

In this respect, eco-design involves life cycle thinking rather than simply the linear design of a product for production, distribution and (first) use. Thinking in cycles involves innovating in where and how raw materials are sourced and produced – and **designing products for after first use** (e.g. for product-life-extension or recycling). Eco-design also involves innovations in **reducing the consumption of materials and energy used during entire life cycles** – not just those of the products themselves.

Life cycle thinking



Source: Adapted from ENEC – Pôle Eco-conception 2014.

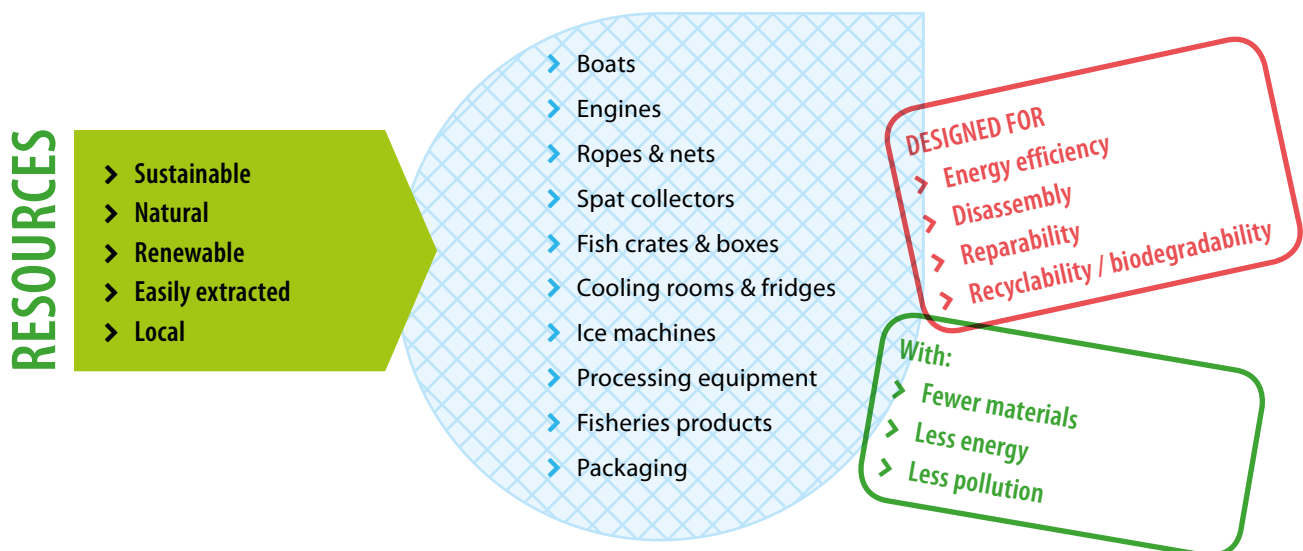
Fishing and aquaculture can exert pressure on the environment in a number of ways, including:

- Over-exploiting targeted **fish-stocks**
- Disrupting the **ecosystems** of non-targeted and farmed species
- Contributing to **marine/aquatic pollution**
- Consuming finite **fossil fuels** and in so doing generating **harmful emissions** to power boats and for the energy needs of fish auctions and other buildings used to receive the catch



FLAGs might, therefore, want to consider how production can be designed to have a lower ecological footprint, be it in terms of facilitating the regeneration of marine eco-systems or in terms of improving the energy efficiency of the **machines** and **equipment** used. It might also consider how improving the design of products, including **packaging**, further along the fisheries supply chain, can increase their quality while reducing their impact on the environment. Eco-design can bring a series of **benefits**:

- > Preserve precious resources
- > Reduce vulnerability to supply disruptions of raw materials
- > Reduce pollution
- > Reduce energy costs
- > Reduce distribution costs
- > Increase quality and value of products and services
- > Provide new business opportunities for forward-thinking entrepreneurs



Eco-proofing fisheries production systems

Our current economic model also puts pressure on the fishing and aquaculture sector to capture and produce as much fish as possible, as quickly as possible and for the lowest possible cost. This can lead to over-fishing of those species that are most popular with the consumer and that are easiest and cheapest to handle. In aquaculture, high concentrations of fish can result in a series of environmental hazards while undermining the quality of the fish produced.

Supporting local communities to design **production systems that are regenerative and do not deplete fish stocks or damage aquatic ecosystems** is the first step to building a circular fisheries economy. It will make fisheries activities and aquaculture more resilient, safeguarding the business for future generations.

More about the role FLAGs can play to support healthy fishing and aquaculture eco-systems – and the added value that can be derived from such initiatives – is dealt with in depth in FARNET Guides #16, **Strengthening local resource management**; #14, **Integrating aquaculture within local communities**; and #8, **Marketing the local catch**. They offer, for example, information related to designing and supporting the uptake of **more selective gear**; production models such as **integrated multi-trophic aquaculture**, which take advantage of mutually complementary species (e.g. oysters and seaweed); and how FLAGs can support initiatives that promote **more sustainable consumption patterns**, e.g. of local, in season fish.



Reducing resource consumption, landfill and litter

Our current economic system encourages ever-increasing consumption of material goods. Indeed, planned obsolescence has become commonplace within the design of too many of the goods we use. This is exhausting finite raw materials while creating mountains of non-biodegradable waste. Eco-design can play an important role in reducing the quantities of raw materials we extract from our planet and the quantities of waste that end up polluting it.

Q Planned obsolescence is a policy of designing a product with an artificially limited life, so it will become obsolete after a certain period of time, thus necessitating repeat purchases.³

In eco-design, the production of goods aims to use as few raw materials as possible, including water, and select those which are sourced sustainably, for example, that can be regenerated in a reasonable time-frame. Equipment and machinery should also be **designed to last as long as possible⁴ and to facilitate disassembly, repair⁵ and recycling**, thus saving precious resources. Single-use items, such as packaging, should be reduced to a minimum and **designed to be biodegradable**.

This shift in thinking and better designing what we produce can offer exciting opportunities to create better quality products that are more environmentally respectful and capitalise on a highly skilled, knowledge-rich workforce.

FLAGs can help support fisheries and aquaculture related sectors to link up with the research and development needed to integrate these eco-design principles into all types of equipment and machines used for production, as well as further along the supply chain.

Rethinking materials

The fisheries sector is particularly reliant on plastic (for fishing gear, aquaculture equipment, fish crates, packaging, etc.). Thanks to its rot-proof nature, plastic has proved extremely effective in the marine environment. However, it is also a non-biodegradable material, made from fossil fuels, that wreaks havoc on marine ecosystems. Indeed, the devastating consequences of micro-plastics on marine organisms, larger plastic items being ingested by fish or ghost nets snaring non-targeted fish and marine mammals are widely known to fisheries communities.

While better collection and recycling offers one solution (see section 4), unlike certain materials, e.g. aluminium, plastic can only be recycled a limited number of times before necessarily finding its way to landfill, incineration or into our rivers, lakes and oceans.

Although challenging, the search for **viable alternatives to plastic** is therefore imperative. Initiatives already exist to research and test replacements for plastic, for example, based on algae, shells, fish scales and sugar cane waste⁶. FLAGs can play a vital role in seeking out those who are innovating with new materials and supporting market uptake of viable alternatives.

3 Bulow, Jeremy (November 1986). "An Economic Theory of Planned Obsolescence".

4 NB: a balance must be struck between durability and the quantities of raw materials and energy needed to produce a more durable good. Increased usage of that good must justify additional resources potentially needed.

5 See section 3: Sharing, repairing and reusing.

6 e.g. the "vegan bottle" made by Lys Packaging.



Testing natural materials for spat collectors, France

Marennes Oléron FLAG is supporting the research and testing of a new bio-based, biodegradable and industrially-compostable bioplastic compound partly made from oyster shells. This material would be used to make oyster spat collectors which are currently made of non-recycled plastic and contribute to marine litter and waste. [Further information](#)



Moving to cotton-based mussel ropes, Ireland

In the area of the **South FLAG** in Ireland, the plastic mesh in the rope used for breeding mussels has been replaced with biodegradable cotton. This solution was copied from New Zealand's "Hairy Rope System" and, as well as being environmentally-friendly, is more efficient for seeding longlines and harvesting mussels. [Further information](#)



From plastic to seaweed packaging

There are various companies developing new types of packaging using seaweed instead of plastic: **Evoware** and **Skipping Rocks Lab** are just a couple of companies that already produce biodegradable and edible packaging.

"Plastic" cups from fish skin scales

Scale is a French start-up based in the **Basque Coast FLAG's** area. They have developed the technology to make different plastic-like items from fish skin scales. The material has low energy demands to produce and is 100% biodegradable.

Reducing energy consumption and carbon emissions

As with most economic sectors, fisheries and aquaculture have important energy demands: to power boats; to run equipment, machinery and offices; and to distribute goods to market.

However, the sector's dependence on crude oil and natural gas for fuel not only consumes finite resources, but also contributes to the destruction of the natural habitats from which they are extracted and the production of greenhouse gases, which have been linked to global warming, including the warming and acidification of the oceans.

Efforts to minimise fuel consumption through more energy efficient design or, better still, a move to renewable energy are becoming increasingly urgent and FLAGs can help support this transition through awareness raising and direct support. This might include:

- Supporting fishing boats to **reduce their fuel needs**, e.g. through new fishing gear
- A move to boat engines that are **less dependent on fossil fuels**



- Support to reduce the energy consumption of sales and processing activities: **better insulated** cooling rooms, more **energy efficient machinery**, use of equipment made from **recycled or repurposed materials**⁷, etc.
- A move to renewable energy and better energy efficiency (e.g. insulation) in **related buildings**: fish auctions, processing units, sales outlets, etc.
- A move to renewable energy and/or better energy efficiency of **vehicles bringing fish to market**⁸

Moving towards renewables, Spain

The **Eastern Asturias FLAG** has helped the fishing organisation ('*cofradía*') of Bustio to become 100% self-sufficient in renewable energy. Two projects have equipped their buildings, including the fish auction, with solar and wind power, as well as storage batteries allowing them to ensure any energy surplus can be retained and used when needed. **FARNET Good Practice**.

Piloting energy efficient boat engines, Spain

The **Malaga FLAG** initiated a pilot project to research and test fuel saving techniques and gas emission reductions. It teamed up with the local university and a research centre specialised in boat engines. The nanotechnology used in the engines resulted in lower CO₂ emissions and reduced fuel consumption by 15%. **FARNET Good Practice**.

Hydrogen engines – fishing boats of the future? **Basque Coast FLAG**, France

In Capbreton, south-west France, a fisherman has installed a hydrogen assisted engine. Having contacted his local FLAG, plans are now underway to bring together the other local fishermen in order to raise awareness of the initiative, follow the results of this test and potentially support others to move towards this technology which reduces CO₂ emissions by over 20%.

The **Eco-design Directive** provides consistent EU-wide rules for improving the environmental performance of certain products, setting out, for example, minimum mandatory requirements for energy efficiency. The EU's **Energy Labelling Regulation** may complement eco-design requirements with mandatory labelling requirements.

In April 2018, the European Parliament approved a **package to update waste management rules**, including new targets for recycling, packaging and landfilling. The package includes economic incentives for the design of products that can be more easily recycled or reused. It also places more responsibility on producers under the Extended Producer Responsibility scheme for end-of-life management costs of their products.

7 Depending on the materials used, recycling tends to require less energy than processing raw material into products. For more on recycling, [see section 4](#). Recycling of materials at the end of a product's life

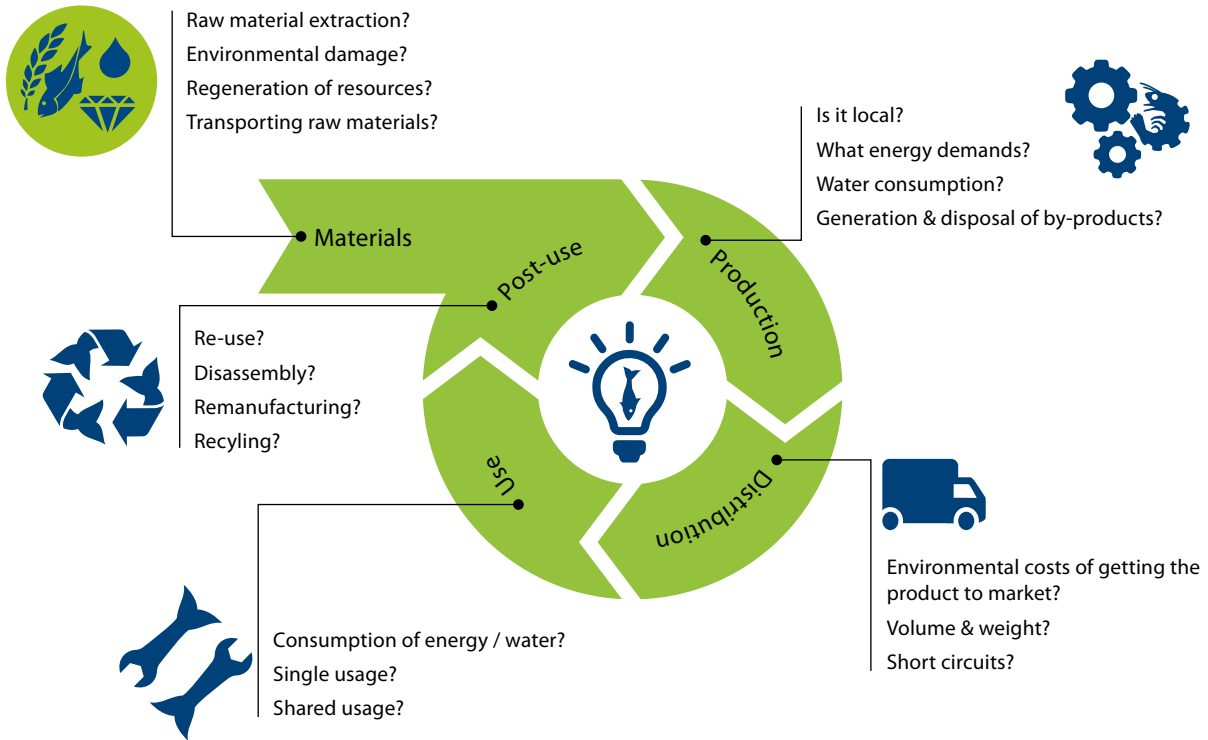
8 Pooling distribution is also a way to reduce energy needs, [see section 3](#) on making usage more circular.



TIP



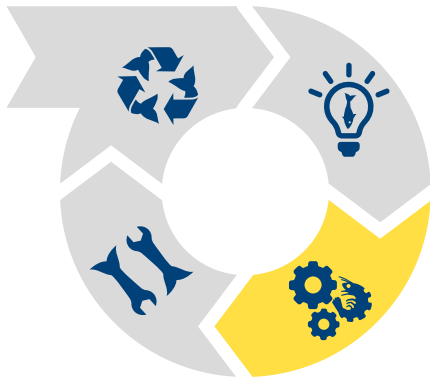
Take the time to analyse the impact of new ideas on the whole life cycle of a product: extraction and transport of resources, production processes, usage and after first use. Sometimes, what seems like a sustainable solution involves environmental costs elsewhere.⁹



9 For further information on rethinking design, see the [Okala eco-design strategy wheel](#)



2. Turning production “waste” into a resource



“One man’s trash is another man’s treasure”

Once we have improved the sustainability of the raw materials we use and how we design our products to minimize the quantities of raw materials and energy used in making and using them, the next step is to think about what we can do with any by-products that are still generated from our production systems.

Changing our attitude towards waste from production processes and rethinking what to do with by-products is, therefore, a fundamental part of the circular economy. In this way, **by-products can be considered as a resource to be channelled towards other production cycles.**

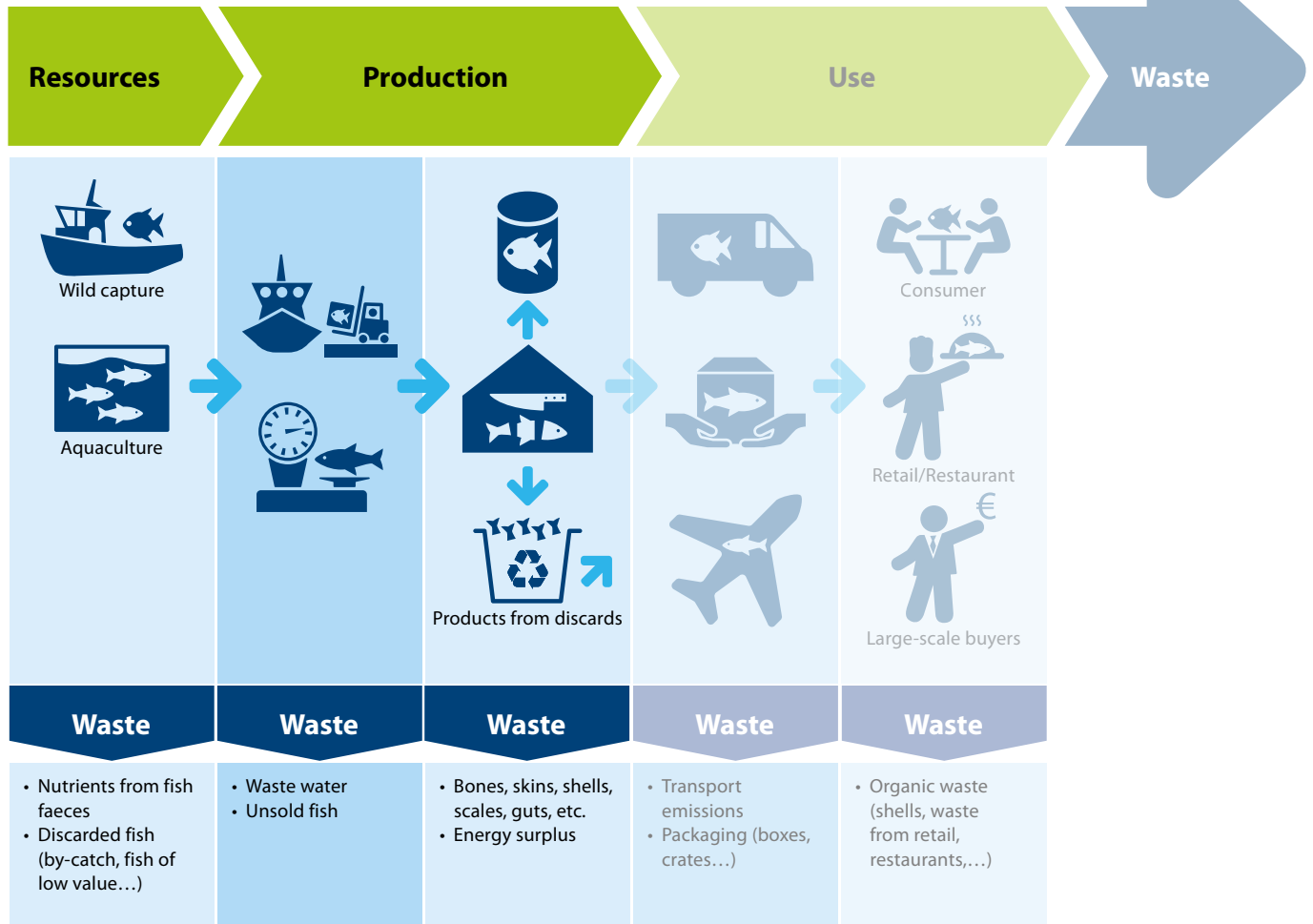
FLAGs can help encourage their communities to do this, finding creative outlets for by-products all along the fisheries and aquaculture supply chain. This might be organic fish waste from different stages of the supply chain or heat and energy generated, for example, during processing. This section will focus on the value chain up to and including processing. How to make distribution and consumption more circular will be dealt with in section 3.

There is huge scope for FLAGs to help local producers and processors adapt how they work in order to avoid waste and capitalise on potential resources which were previously disposed of; and it can bring many **benefits**:

- Optimising resource usage and reducing the amount of virgin resources we need
- Creating less waste that must be disposed of through incineration or landfill, both of which pollute the environment
- Reducing costs in terms of raw materials and disposal of waste
- Creating added value for the area through new products and processes
- Increasing the resilience of local communities by strengthening networks and collaboration



Waste from fisheries and aquaculture production



Adapted from Manta Consulting Inc.

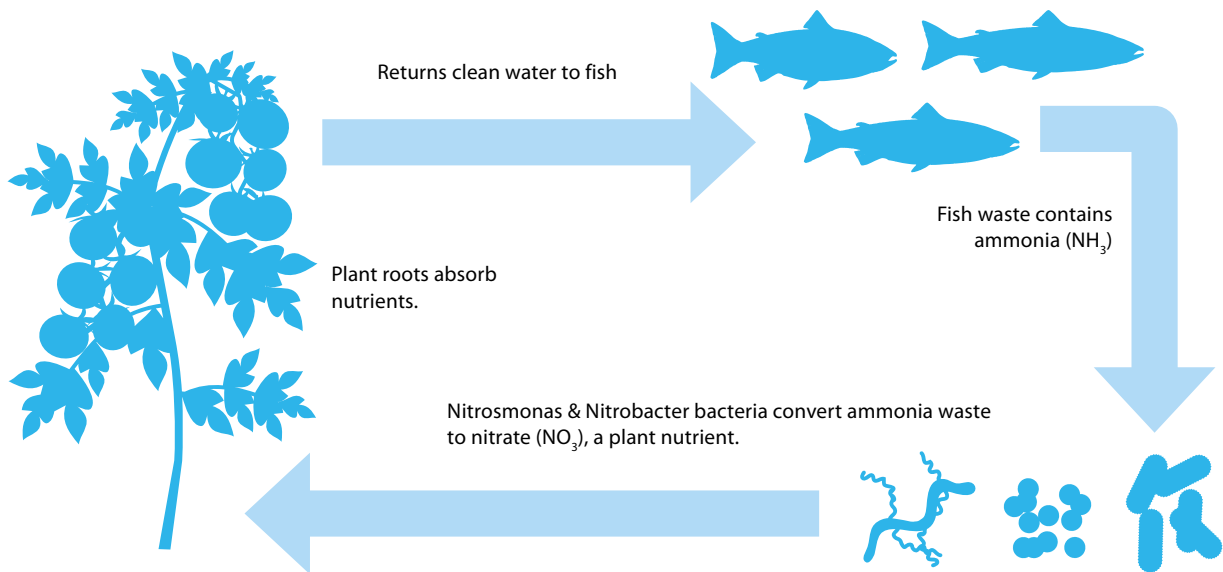
Waste from fisheries production

At the beginning of the supply chain is the waste produced by fish before they are caught. While a build-up of fish excrement, e.g. from aquaculture, can be toxic, if managed correctly such waste can be a valuable resource for eco-systems and economic activities that rely on the input of nutrients, such as the cultivation of plants.

Solid waste from fish farms can be channelled towards producing **fertiliser for agriculture and gardens**. More ambitious entrepreneurs might consider bringing the production of fish and plants together on the same site in a closed circuit whereby the nutrients from fish waste are used to grow vegetables and the water in which the fish live is cleaned by the plants before being re-circulated. This system is known as **aquaponics** and makes extremely efficient use of resources. It is also a clear example of a cascade of nutrients going from one system to another in biological cycles. See FARNET Guide #14, [Integrating aquaculture within local communities](#), for more information on aquaponics.



Aquaponics: an example of cascading nutrients



Source: Adapted from [SchoolGrown](#)

During and after the capture of fish and shellfish, come a variety of types of waste that producers can seek to channel towards new uses. Much of this is **organic fish waste** in the form of discarded fish (due to small size, unprofitable species, market mismatch, etc.) and discarded fish parts from processing (skin, bones, shells, guts, etc.).

Shellfish production can also sometimes entail removing **seaweed** from beaches or mussel ropes in order to allow shellfish to develop better; this seaweed needs to be disposed of, as does, for example, **dirty water** from fish auction or processing activities. **Heat** and **fuel emissions** are also by-products to reduce or capture for other uses.



Unwanted catch



A number of FLAGs have demonstrated innovative ways of capitalising on previously unwanted catch:

Huelva FLAG, Spain, supported a project to develop quality **fishmeal for aquaculture** from waste from the fish auction.

The **Lapland FLAG**, Finland, worked with the local municipality to support a fishermen’s cooperative to start **grinding roach by-catch** from pike and perch fishing which they sell to regional processors for fish sticks, “fish loaf”, etc. instead of sending to landfill.

Thessaloniki FLAG, Greece, brought fishermen and a processing company together to turn blue crab **by-catch into a new delicacy**. **FARNET Good Practice**.

Fish waste from processing



Vänern Archipelago FLAG, Sweden, brought together both public and private partners, including fishermen and universities to research and develop ways to generate value from the **by-products** left over from vendace roe extraction.

FARNET Good Practice

In France, a study funded by the **Basque Coast FLAG** is researching the use of specific molecules present in fisheries by-products, such as collagen (found in fish skin) and hyaluronic acid (found in tuna eyes) for the **cosmetics and pharmaceutical** industries. The initiative is led by the University of Pau and the *Pays de l’Adour*, in collaboration with the local fishing committee, the Basque Country Urban Community and the New Aquitaine Blue Growth Cluster.

Further information.

Shells from shellfish production



An association in the **Auray & Vannes FLAG** area, France, has worked closely with the regional shell-fishing committee to create various value chains for empty oyster shells. By partnering with a local research lab, 20-25 oyster farmers and a local factory, oyster shells have been used in a variety of products, including **cattle feed, fertiliser, road paint, 3D printer filament** and **soles for shoes**. **Further information.**

In Olbia, Italy, mussel shells are no longer considered waste. With the help of the **Northern Sardinia FLAG**, local students and teachers are using crushed shells to create useful objects of all sorts (**watch cases, jewellery, tiles, etc.**), from moulds created by 3D printing. **FARNET Good Practice.**

Seaweed by-products



In Vilaboa, Spain, the shellfish farmers often need to remove huge amounts of seaweed from their production areas but, until recently, this biomass was not utilised and its uncontrolled degradation could cause environmental problems and contamination. With the support of the **Ría de Vigo FLAG**, the local “*cofradía*” (fishermen’s association) and municipality decided to make better use of this resource by taking action to correctly compost the algae waste and turn it into **organic fertiliser** for public green spaces. **Further information.**

The **Dorset and East Devon FLAG**, UK, has supported a local aquaculture company in plans to integrate oysters and algae production. The production of specific types of algae on longlines involves removing unwanted species that also grow on the lines. From the outset, the FLAG put the aquaculture company in contact with other local companies with a view to redirecting these unwanted species of seaweed for **cosmetics** or **food additives**. **Further information.**



Linking with other sectors

FLAGs will have to look beyond the fisheries and aquaculture sectors in order to find the different stakeholders that may be interested *and* have the capacity to derive value from fisheries-related by-products. In this respect, they have an important role to play in connecting fishing and aquaculture companies with local manufacturers, farmers, research organisations and many other public and private stakeholders.

As well as considering what uses can be found for waste from fisheries and aquaculture supply chains, FLAGs might also want to think about how the fisheries and aquaculture sectors can benefit from the by-products of *other sectors*. This is what the Costa da Morte FLAG, Spain, did when supporting a project to redevelop the area around the Bay of Anllons where the local cockle picking association worked.

Capturing heat from the leisure sector, Spain.



As part of an integrated project to promote the local shellfish activity and its products, the **Costa da Morte FLAG** in Galicia supported the redevelopment of the area overlooking the bay where the Anllons cockle pickers work. The idea was to inject life into the area, giving visibility to this traditional activity and raising the profile of the local cockle.

Proposals included landscaping the area and fitting it out with a playground for children, a BBQ area and a shallow, outdoor swimming pool for children – especially as discussions with the town hall had revealed an excess production of hot water in the

summer from a local public swimming pool. The excess of solar heated water in the summer was a problem for the leisure centre and became a resource that has resulted in the installation of a pool, heated exclusively by this unwanted warm water.

In summer months (July-August) the pool attracts over 2 000 visitors, while the Association of Anllons Cockle Pickers has stepped up its promotional activities (including tasting sessions) and welcomes approximately 1 000 school children a year to learn about their activity. **FARNET Good Practice**.

Linking with local agriculture to power fishing boats in France?

With the support of the Atlantic Pyrenees – Landes Fishing Committee, the French Institute of Pure Vegetable Oils (l’Institut Français des Huiles Végétales Pures) launched an ambitious pilot project to demonstrate that fishing boats could move away from using fossil fuels and instead run on sunflower oil produced as a by-product from the production of animal feed. Although strongly dependent on oil prices and tax regimes, the initiative was successful in demonstrating that the technical know-how is there to move fishing fleets towards bio-fuels.

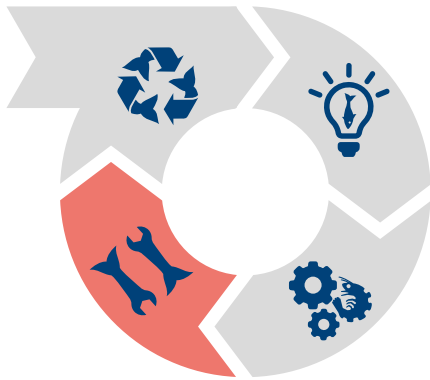
From restaurant waste to aquaculture, France

The **Esterel Côte d’Azur FLAG** is supporting the **Paul Ricard Ocean Institute** to test an on-land circular system to rear sea bass in which the use of waste from local restaurants is collected and used to breed insects, which in turn provide the protein for fishmeal for aquaculture.

Building linkages between stakeholders that consume and produce different materials is a vital part of fostering a more circular economy at local level. The factsheets in **Chapter 2**, lay out some of the important steps that FLAGs can undertake to build profitable partnerships that reduce our consumption of virgin raw materials.



3. Making usage more circular



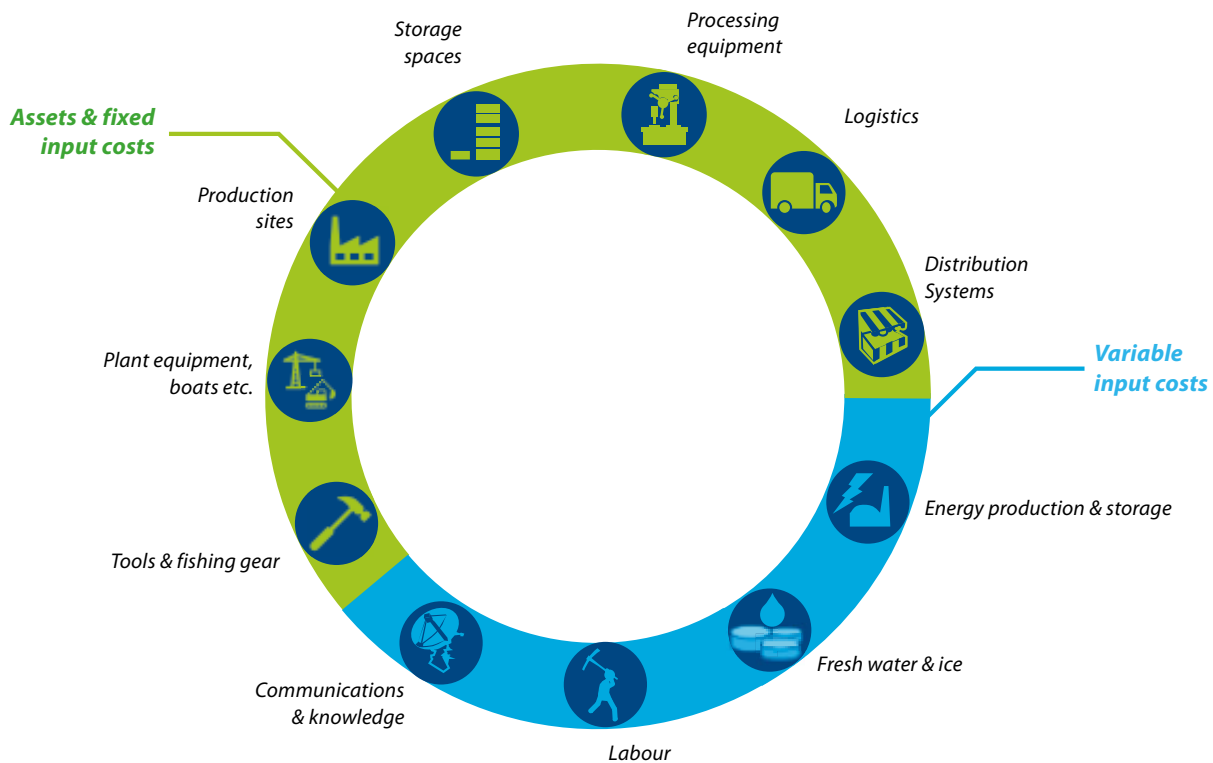
Given the pressure on natural resources that comes with every new product manufactured, more sustainable practices would imply moving away from the constant production of new goods which are used a limited number of times before being discarded. By re-organising how products are used, we can foster sharing models that mean fewer items need to be produced to meet the same needs and ensure that repair and reuse of products becomes more commonplace, so that products stay in use for longer. Such actions decrease the quantities of virgin raw materials that need to be extracted as well as reducing the amount of waste and pollution generated.

In FLAG areas, this might involve reconsidering how fishing and aquaculture equipment and machinery are used. To what extent can certain items be shared? Are there ways to repair rather than discard old nets, crates and other equipment? Can products find a second-life after the original owner no longer wants them? And how might the re-distribution of different products (equipment but also unsold fish) be organised? These are all questions that FLAGs can explore.

Sharing

The production and processing of fisheries and aquaculture products relies on a series of inputs and assets, ranging from boats and fishing gear to auction halls, storage spaces, distribution systems, energy, water and knowledge. Many of these can be shared in different ways by making production and consumption systems more collaborative.

Fisheries production assets and inputs







Source: [designContext](#)



Sharing, i.e. facilitating the use of a product or service by more than one stakeholder, includes, for example, lending, pooling, renting and leasing. In sharing models, owners are generally responsible for maintenance and service quality. FLAGs can play an active role in encouraging local communities to re-consider traditional usage patterns, based largely on ownership, and instead look to optimize usage of the equipment, machinery and services they use.

Different examples of sharing

 Lending Temporary use	Free or very cheap. No need to maintain or store products.	e.g. tools to repair nets, equipment, etc.
 Pooling Shared use	Reduces costs and environmental footprint. Increases social capital.	e.g. sharing fuel & ice points, landing equipment, storage space, processing equipment, maintenance services, labour & expertise, transport to market, sales points, etc.
 Renting Non-exclusive use	Less capital outlay needed, higher producer responsibility.	e.g. space/buildings in the port from a local public authority, equipment to trial new processing techniques, nets & fish crates, etc.
 Leasing Option to buy	Less initial capital outlay needed, with the option to buy later. Can facilitate access to the profession for young fishers.	e.g. refrigerated vehicle, boat for fishing or diversification activities such as tourism.

Sharing employees, France

The **Arcachon FLAG** has supported the setting up of an organisation to encourage and facilitate the sharing of employees between local oyster farming activities and the fishing sector. **FARNET Good Practice.**

A shared fish handling centre, Finland

With help from the **Kainuu-Koillismaa FLAG**, fishermen and aquaculture producers have pooled resources to freeze, store and process fish. **FARNET Good Practice.**

Tool libraries... the marine sector next?

Edinburgh Tool Library gives its members access to over 1 000 tools
... *without the need to store them, maintain them, or buy them in the first place*

The average power drill is used for a total of 13 minutes in its lifetime
we don't all need to own one!

The average UK household spends £110 a year on tools
annual membership to Edinburgh Tool Library costs £20

Source: Edinburgh Tool Library



Collaboration from different forms of sharing brings **benefits** such as:

- Sharing of costs
- Increased quality of products and services due to economies of scale
- Higher efficiency of use (avoiding duplicated capacity)
- Sharing of risk
- Sharing of knowledge
- Fewer total resources/raw materials needed = further cost savings + reduced pressure on the environment

Sharing must be organised

FLAGs should bear in mind that for sharing to be effective, it must be well organised and coordinated by a designated entity. In countries where fishing cooperatives exist, they are usually well placed to take on this role. However, there are other ways to organize sharing and different models can be suitable for different types of sharing.

There are three main ways in which sharing can be organised, via:

1. **The market:** for example, leasing and renting models are generally based on a contract whereby one party pays another to use a product or a service. The recipient will generate revenue based on this exchange.
2. **The State:** publicly owned assets might also be rented or leased (e.g. space or buildings in port areas, fish quotas, etc.); libraries which lend books and other items to the public are very often organised by a town or city authority. The FARNET Support Unit is also an example of a publicly funded service, providing networking support and advice to the fisheries CLLD community.
3. **The commons:** collaborative and community groups may take it upon themselves to organize sharing models. For example, fishing cooperatives are a prime example of how resources are pooled to acquire or use harbour space, machinery and equipment necessary for handling fish. Associations or community groups may also organize lending models or even renting or leasing arrangements.

Whatever the entity organizing the sharing, it needs to dedicate resources to coordinating the accumulation of certain assets (e.g. through purchase or donations) and making them easily accessible to those who need them, when they need them. It may also need to ensure quality or safety checks of the service or good being shared, along with insurance and some form of cleaning, maintenance and/or repair. Whether the activity is for profit or not, a sustainable business model is still necessary.

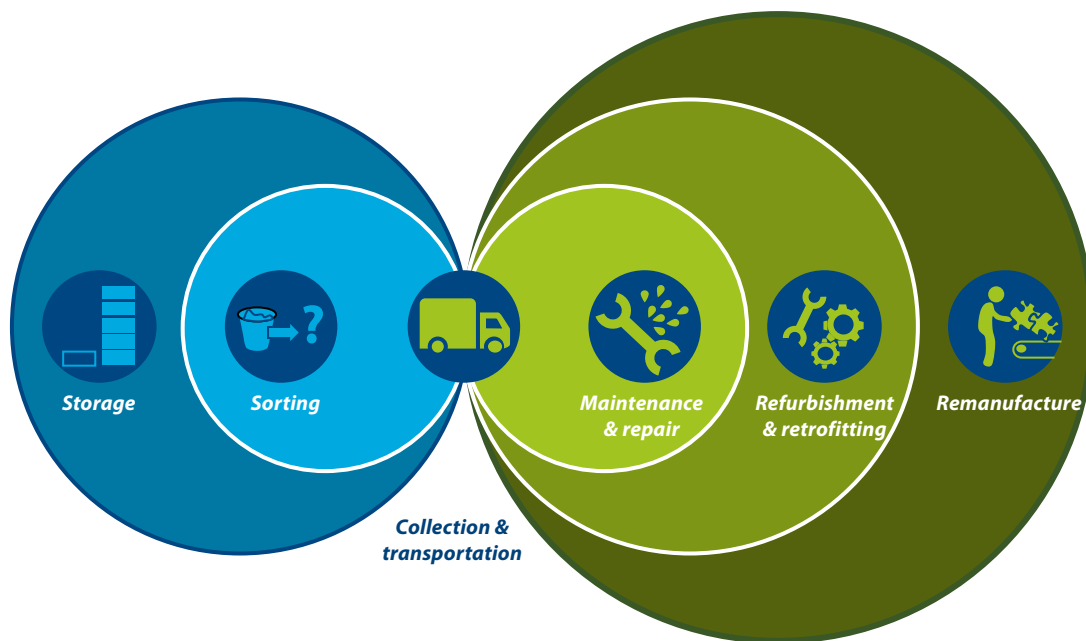


Repairing

Just like sharing, repairing different types of goods also needs to be well organised if it is to become widespread enough to effect change to our consumption habits – and therefore production habits. FLAGs can help local stakeholders work together to build systems that make repair commonplace. In this way, they can help create a culture in which product life is maximised, improving resource efficiency and reducing pressure on the environment.




Different sorts of repair exist, but any system will rely on the collection and transportation of damaged goods to a place where they can be sorted, stored and repaired, before being transported back to the user.

Organising repair



Source: [designContext](#)

Examples of product life extension

 Maintenance & Repair	Cleaning and keeping in good condition, regular checks and repairs when needed.	e.g. washing and repairing fish crates, oyster spat collectors, plastic floats, fishing nets, etc.
 Refurbishment & Retrofitting	Improving the condition of buildings, equipment, machinery, etc.; fitting with new features.	e.g. re-conditioning a fishing boat for multi-purpose (e.g. tourism), insulating fish storage buildings or adapting boat engines to reduce energy consumption.
 Remanufacturing	Recovering, disassembling, repairing or replacing and re-assembling components for resale with the quality and performance of a new product ¹⁰ .	e.g. boat engines, distribution vehicles, etc.



Repairing plastic crates for the fish auctions, Spain



In order to repair damaged crates used in the local fish auction, [Mariña Ortegá FLAG](#) supported a social enterprise to acquire the know-how and equipment to solder plastic. The activity is providing meaningful employment to community members with disabilities as well as keeping fish crates in use longer, reducing the amount of plastic waste generated by the auction and saving the fish auction 65% of the cost of replacing such crates. [FARNET Good Practice](#)

Remanufacturing... the marine sector next?

The French manufacturer, Renault, has been reconditioning engine parts for a long time, rather than scrapping them. Its factory in Choisy-le-Roi sends no waste to landfill: instead, it has put in place a system of reverse logistics to ensure the lorries transporting cars from its factories to its sales outlets return with spare parts returned for reuse.

The utilisation of this secondary resource and investing in recycling technologies have emerged directly from the supply challenges of metals and price increases linked to the global rise in demand for raw materials. It is a profitable model, in which remanufactured parts are sold for 30-50% less but with the same guarantee of quality.

Savings from the production of a remanufactured part compared to a new part:

- 80% less energy
- 88% less water
- 92% fewer chemical products
- 70% less waste production

Source: [Ellen MacArthur Foundation](#)

Reusing

Whether goods have been repaired or prepared for a second (or third) life, or were never used in the first place, much work remains to be done to facilitate the **re-distribution of assets** that are used in the fisheries sector (e.g. fishing gear, aquaculture equipment, etc.) as well as its outputs (e.g. processed fisheries products) which remain unsold.

Setting up systems to redistribute goods for reuse is an important part of the circular economy, helping to avoid waste as well as building socially inclusive models that make goods available at reduced prices. This can assist young people to get started in the fisheries or aquaculture profession as well as helping other members of the community who may need help.

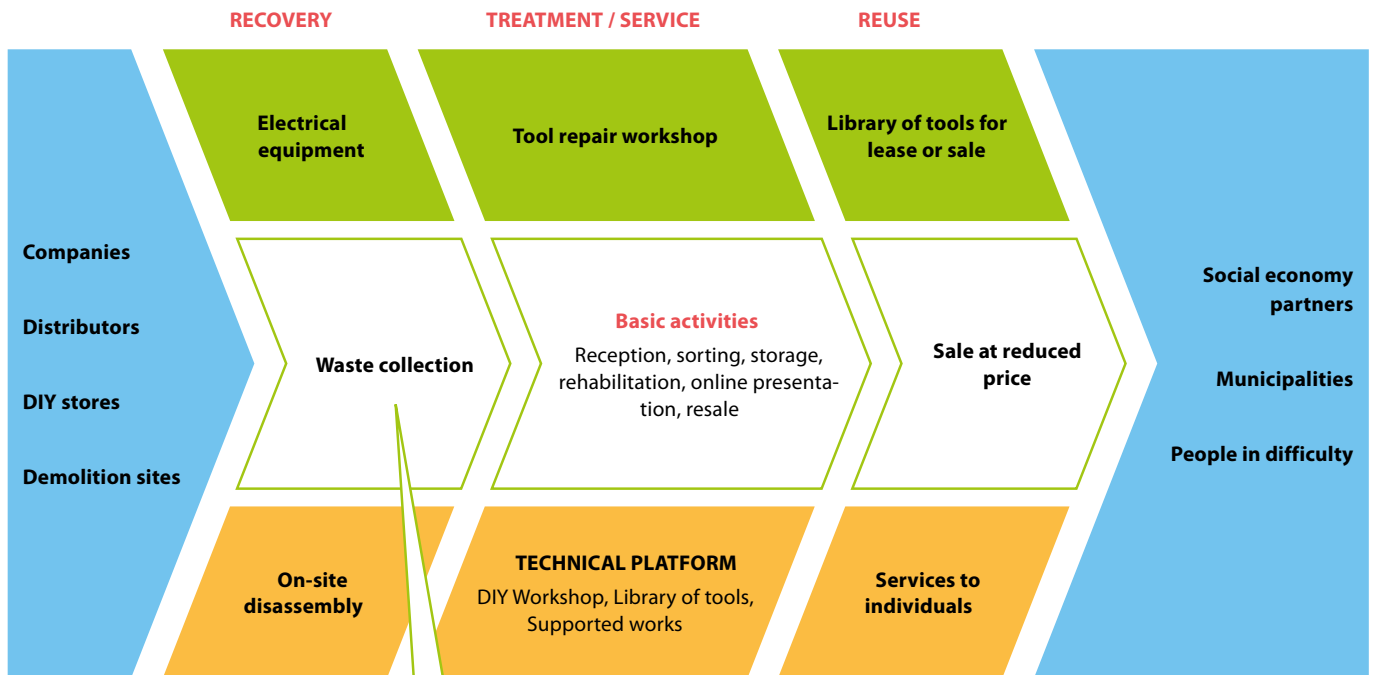
A second life for equipment and machinery

Investments needed to start up as a young fisherman or aquaculture producer are high and very often prohibitive. So, what if fisheries communities put in place systems to facilitate the transfer of still usable equipment and machinery to young or simply neighbouring fishermen who could still use a product that another would like to replace?

FLAGs can encourage the use of existing **online platforms** such as eBay or Facebook by fishermen's associations for example. They can also encourage the emergence of **physical spaces**, e.g. in the port area, where old equipment is collected, organised, re-conditioned and made available for reuse, either through sales, lending, renting or leasing systems.



Soli'bat's system for recovery and reuse of building materials, France



... what about in fishing and aquaculture?

Fishing overalls and footwear, fishing nets, ropes, shellfish pots, oyster spat collectors, boxes and crates, boats, label printer rolls, processing equipment, fridges, etc.

Organising reuse

Soli'bat is a French platform for the recovery and sale of reusable materials and equipment from construction and public works. It has worked with 50 different partners, including public authorities, construction companies and NGOs to launch this initiative which makes building materials and tools available to those with low incomes.

Fishing nets for developing countries, France

Laurent Dubois was a fisherman from Saint-Jean-de-Luz in the **Basque Coast FLAG** area, France. In the 2000s, with the support of the FLAG, he took the initiative to start sorting and repairing abandoned fishing equipment such as nets, purse-seines, life jackets, ropes and motors collected from nearby harbours. He filled several containers with used but still serviceable fishing equipment, which were sent to local fishing communities in Côte d'Ivoire, Guinea, Gabon, Haiti and Senegal.

TIP



Tips for organising local redistribution

- > In-depth knowledge of the area
- > Political buy-in & involvement of local authorities
- > Preliminary / feasibility studies
- > Mobilise partners in fisheries & aquaculture
- > Investment and operating budget study
- > Steering and monitoring committee



Redistributing fisheries products

Approximately 35% of fish and seafood produced gets lost or wasted at some point along the supply chain¹¹, i.e. from when it is captured or produced, to the uneaten food that goes in the bin. Part of this includes fish and shellfish prepared but unsold to the consumer for different reasons. Many of these products are still edible and, as indicated in the Food Recovery Hierarchy below, priority should go to redirecting them to people in need rather than seeing them end up in the bin.

While there are health and safety standards to respect, FLAGs can help bring together the partners needed to explore how retailers, restaurants and other sales outlets can organise their activities in a way that channels unsold, but still in date, fish and fish dishes towards community members who could benefit from them. They might focus just on fish – or take a broader approach and redistribute all types of surplus food.

FoodCycle... and in fishing communities?

FoodCycle is a UK charity whose team of volunteers collects surplus food from supermarkets and other retailers and prepares free meals for community members in spare kitchen spaces. In doing so, it builds local communities and combats loneliness, food poverty and food waste. FoodCycle kitchens are open to all, though over half of their guests live alone and 68% feel lonely.

425 000 tonnes of surplus food saved since its launch

Over 1 million meals cooked and served in different local communities¹²

1 200 meals and take-home boxes a week

80% of guests have made friends and feel more part of their community

Source: FoodCycle

¹¹ Source: [FAO of the United Nations](#)

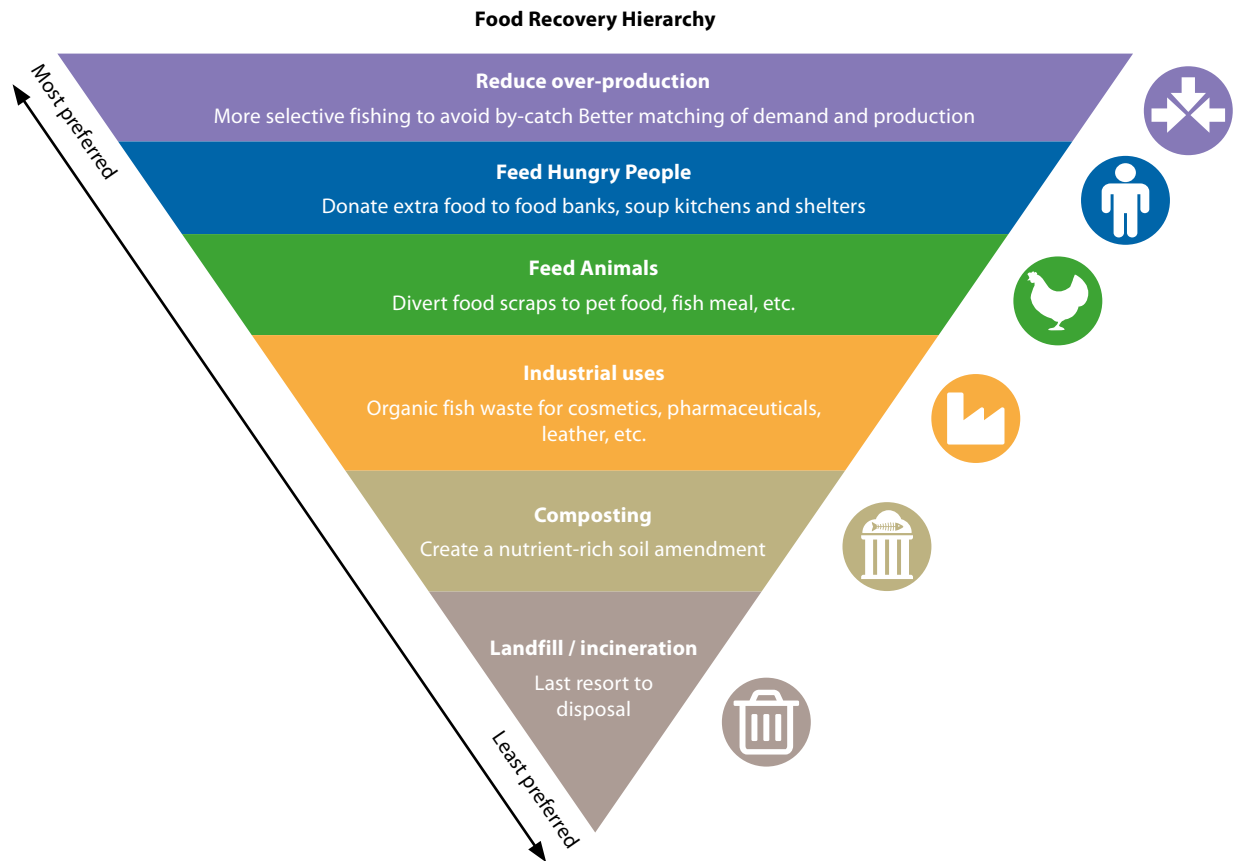
¹² Source: FoodCycle's [10-year social impact report](#)



Reducing food waste

The “food recovery hierarchy” prioritises options for reducing food waste, starting with the avoidance of surplus production in the first place.

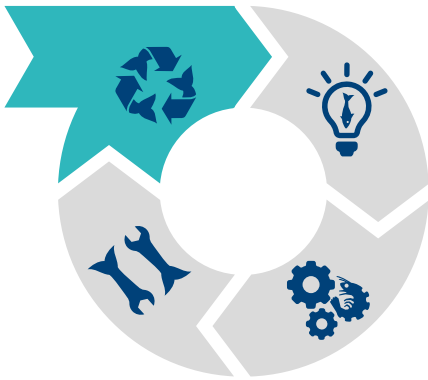
More selective fishing methods can help reduce unwanted captures, as can channelling organic fish waste towards other users.



Source: Adapted from the [Food Recovery Hierarchy of the US Environmental Protection Agency](#)



4. Recycling of materials at the end of a product's life



The final stage of a circular product life cycle – once we have minimised resource exploitation, designed out as much waste as possible, redirected by-products to other uses, and used and reused a product and its components until no longer possible – is to recycle the materials that went into making that product.

Be it plastic from fishing gear, aquaculture equipment or packaging, leftover oil from boats, or metals from machinery, the fisheries and aquaculture sectors rely on many different goods and materials which, at the end of their lifecycles, become waste that must be disposed of. **Increasing our ability, capacity and motivation to recycle is a fundamental part of building a circular economy** that transforms and adds value to such waste, rather than allowing it to pollute our local environment (or someone else's).



Recycling refers to the collection, sorting and processing of base materials from household, commercial or industrial products for use in other manufacturing processes¹³.

- ▲ 1.3 billion tonnes of solid waste generated every year
- ▲ 2.2 billion tonnes by 2025¹⁴
- Toxins
- Greenhouse gases
- Visual pollution

- ▲ 8 million tonnes of plastic entering the oceans annually¹⁵
- Water pollution
- Ingested by fish
- Damage to ecosystems

Marine litter

Over **80% of marine litter in Europe is made up of plastics** of different types and 27% (11 000 tonnes)¹⁶ is estimated to be plastic waste from fishing gear (nets, lines, pots, traps, etc.).

This makes managing plastic a number one priority if fishermen and aquaculture producers are to enjoy a less polluted marine space and to continue producing/catching healthy fish.

¹³ Adapted from [Circular Economy, Practitioner Guide](#)

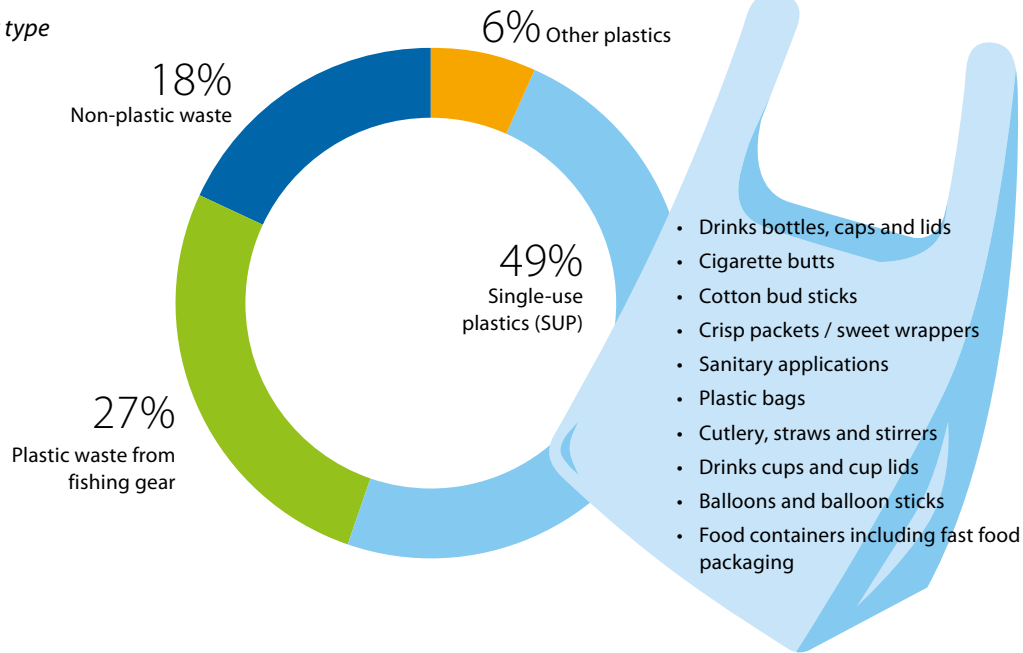
¹⁴ Source: Joint Research Centre - European Regional Seas Conventions

¹⁵ Source: [UN Environment Assembly](#)

¹⁶ Source: Joint Research Centre – European Regional Seas Conventions



Marine litter by type



Source European Commission

FLAGs can play an active role in helping fishing communities reduce the amount of plastic that ends up in Europe's seas, lakes and rivers. Current figures suggest that **only 1.5% of fishing gear is recycled**¹⁷ so improving this situation could be a key action to start with. Raising awareness and fostering a move away from single-use plastics could be another priority action in FLAG areas.

Recycling fishing nets

When it comes to ensuring fishing gear does not end up as litter, a key challenge faced by the fishing industry is the **lack of recycling facilities and the high financial costs** involved in the disposal of nets. At the same time, many small ports do not have **space to store old fishing nets** and many quaysides are littered with abandoned fishing nets.

Companies that collect and recycle fishing gear and equipment are starting to emerge; however, the technology can be expensive and so ensuring enough critical mass to make operations viable is a challenge. FLAGs may need to cooperate with neighbouring areas in order to secure the critical mass to turn the management of old fishing nets into new, profitable activities.

Odyssey Innovation is a net recycling scheme working in various fishing ports in the South West of the UK. It offers free net recycling solutions for polyethylene trawl and nylon gill nets and has set up centralised drop off points across the SW so that smaller quantities of nets can be gathered and stockpiled. The nets are then sent to a Danish based company, **Plastix**, one of the few specialist net recyclers in Europe.

Plastix has developed the technology to handle waste fishing equipment by transforming it into its two main commodity components: plastic and steel. [Video presentation](#).

17 Source: European Commission



Nofir is a Norwegian company, which collects and recycles discarded equipment from fishing and fish farming around Europe and Turkey. The collected material is transported to the factory in Lithuania or Turkey where it is dismantled and prepared for recycling into valuable products like clothes, furniture and carpets.

PROCESS



Source: Nofir

Typical life cycle of a nylon net in Cornwall, UK

- > Manufactured in Japan
- > Distributed globally to the fishing industry
- > Set into nets locally, dependent on fishery (fishing net is created)
- > 3-6 months usage for larger boats, 2-3 years for small-scale boats, before no longer useable
- > Disposed to landfill (costing £400 per tonne!)

Fishing net plastic for 3D printing filament, UK

Fishy Filaments is a Cornish brand that specializes in recycling marine plastics into 3D printer filament. The initiative was supported by the **Cornwall & Isles of Scilly FLAG** which helped connect the founder with landowners, harbours and other relevant bodies to find the space and (crowd) funding to launch activities.

[More information / FishyFilaments.com](https://fishyfilaments.com)

Recycling fishing nets in the PACA region, France

In Mediterranean France, small-scale coastal fishermen each use approximately 2 000m² of nylon, polyethylene and polypropylene nets, which, at the end of their lives become waste that is generally dumped in or near port areas. No systematic recycling of this waste has yet been put in place.

The **Esterel Côte d'Azur FLAG** has been working to set up a system by which old fishing nets are collected and reused, repurposed or recycled. The project aims to support local fishermen to develop new jobs and a circular economy around this plastic waste. The project has the following main stages:

- > **Awareness raising:** local seminars and one-to-one discussions with: fishermen, port authorities, the local plastics industry, engineers, designers, social economy stakeholders and potential investors.
- > **Collection:** of fishing nets from eight pilot ports, including the testing of different systems, e.g. by designated associations or by the fishermen themselves.
- > **Storage:** finding and securing nearby storage site, either publicly owned or made available by participating associations and companies.
- > **Exploring new opportunities** (re-purposing or recycling): work with the Region's design schools, manufacturers (testing sunglasses, furniture, etc. from recycled nets) architects and local artists.



From separating and sorting to testing new products

The **Basque Coast FLAG**, France, has supported the set-up of a workshop where two full-time employees oversee approximately four job seekers to take apart old fishing nets in order to prepare them for reuse or recycling. The project idea was transferred from a similar **project** in the **Marenes Oléron FLAG area** and involves the collection of fishing nets from participating fishermen, taking them apart and sorting them into the different types of plastics (using a “detection gun” to identify the types of plastics of the different parts).

In parallel, the FLAG is supporting a start-up company, NOOSTRIM, to test the quality of the plastic and design and produce new marketable plastic objects with the old plastic.



End-of-life products retain substantial worth if they can be separated into isolated forms that can be used in the production of new products – so the sorting phase is key!

Other plastic marine litter

Fishing gear and aquaculture equipment are perhaps the types of marine litter that the sector can most easily influence. However, almost 50% of marine litter comes from single use-plastics, such as plastic bottles, caps, food packaging etc. FLAGs can also play a role in preventing these general types of plastic litter from polluting their aquatic ecosystems.

Initiatives might include:

- Awareness raising campaigns against littering: in schools, in public places (including touristic)
- Awareness raising campaigns against the use of avoidable plastic items and packaging
- General beach clean-ups
- Fishing for litter initiatives
- Supporting companies that can collect, sort, recycle and/or reuse plastic litter collected
- Supporting partnership building and dialogue to build better management and new supply chains for plastic litter

Reseaclons Project, France



Marina officials, associations and local fishermen are among the network of stakeholders working together to set up a collection and recycling chain for plastic waste caught at sea. Sixteen fishing trawlers from Grau-du-Roi are involved in this pilot project, supported by the **Camargue Vidourle FLAG**, each collecting on average 30 litter items a day at sea. This waste is stored in containers which are emptied and sorted every three weeks by a local inter-municipal body. The plastic contents are then collected by Triveo, a plastic processing company, which has developed and patented a technique to simultaneously recycle a mix of different kinds of plastics for new uses.

The next step of the pilot project will be scaling it up to an economically-viable operation, by involving other ports in the region, new industrial partners and the recycling of old fishing nets within this value chain. [More information.](#)



TIP

**Pesca-tourism and plastic litter**

Ensure fishermen and fish farmers offering fisheries-related tourism activities in your area do not serve food on single-use plastic plates (or with plastic cutlery, cups or straws) and encourage them to play a role in raising awareness among tourists of the importance of taking care of the environment.

EU Plastics Strategy – a new vision for Europe

In January 2018, the European Commission adopted the first-ever Europe-wide **Plastics Strategy** as part of the transition towards a more circular economy. Under the new plans, all plastic packaging in the EU will be recyclable by 2030, the consumption of single-use plastics will be reduced and the intentional use of microplastics restricted.

Its vision is for “a smart, innovative and sustainable plastics industry, where design and production fully respect the needs of reuse, repair, and recycling, and which brings growth and jobs to Europe and helps cut EU's greenhouse gas emissions and dependence on imported fossil fuels”.

- Improving the **economics & quality** of plastics recycling
- Curbing plastic **waste and littering**
- **Innovation and investment** for circular solutions

The strategy will be followed up with different actions, including a Directive on single-use plastics.

The single-use plastics Directive

Due to be officially adopted in 2019, the **Single-use plastics Directive** lays out different measures for different product categories, including a ban on disposable single-use plastics from 2021. It targets the 10 plastic products most often found on Europe's beaches as well as abandoned fishing gear.

Fishing Gear: The Directive also aims to involve all actors in ensuring that derelict gear is returned to shore and included in the waste and recycling streams. Two key elements of the Directive are:

- **Extended Producer Responsibility:** Producers of plastic fishing gear will be required to cover the costs of waste collection from port reception facilities and its transport and treatment. They will also cover the costs of awareness raising measures.
- **Net tagging:** Fishermen will have increased responsibility and incentives to try and retrieve lost nets or report nets lost during their fishing activity. Although rules already exist in the **Fisheries Control Regulation**, this spells a tightening of those rules and reporting requirements.

The Single-use plastics Directive is complemented by other measures taken against marine pollution, such as the **Directive on port reception facilities**. This sets out measures to ensure that waste generated on ships, including fishing boats, or collected at sea is always returned to land for appropriate treatment and recycling. This comes with a responsibility for Member States to ensure adequate port reception facilities.

Circular Plastics Alliance

The European Commission has launched a high-level, multi-stakeholder platform, the **Circular Plastics Alliance**, bringing together key industry stakeholders from along the plastics value chain to reduce plastic littering, increase the share of recycled plastics and stimulate market innovation.

Source: European Commission. [Further information on new rules for fishing gear](#)



On land waste

Avoiding water pollution is one reason to increase efforts to recuperate and recycle waste that can end up in our waterways and seas. Reducing toxic gas emissions, avoiding soil contamination and minimising pressure on the earth's raw materials are further reasons to **build an economy that prioritises recycling**.

FLAGs can help fishing and aquaculture communities make this shift. The waste created from fisheries activities but also by other sectors should all be subject to scrutiny and must be studied closely in order to understand where to best focus attention:

- **Urgency:** which local activities create the *most waste*?
- **Ease:** which types of waste *can* be recycled? (i.e. the technology exists)
- **Opportunities:** where do opportunities exist to develop *new economic activities* from recycling?

Bottles Rope Packaging
Machinery Nets
Oilboats White Goods
Shellfish pots Boxes Bags
Plastic wood Fishing lines
Crates Hooks Metals

Recycling polystyrene boxes, Denmark



In the fishing port of Hanstholm, 150 tonnes of polystyrene waste are generated every year, this is equivalent to 8 500 m³.

The **Thy-Mors FLAG** has supported the creation of Denmark's first recycling plant to process expanded polystyrene (EPS) into plastic pellets that can be sold to manufacturers for a wide range of new products made from recycled instead of newly produced plastic. This is a leap forward in terms of handling used fish boxes.

Given the costs involved in this sort of operation, one of the key lessons is the importance of ensuring that there is sufficient critical mass of the material (in this case EPS) but also that there is a market for the end product. Another challenge for the project was identifying a suitable location with the necessary space and yet within proximity of the supply of EPS. **FARNET Good Practice**.

Recycling engine oil, Spain

The **Granada Coast FLAG** helped set up a system for collecting engine oil and other waste from fishing boats. This was accompanied by awareness raising activities for fishermen to improve the sorting, management and recycling of fishing waste within the harbour area.

The engine oil collected is redirected to established channels for recycling lubricants. In Spain, 1.5 million tonnes are collected and produce almost 700 000 tonnes of new lubricants, proving to be a profitable activity. **Further information**.



Recycling yes!... and upcycling and repurposing!



FLAGs might also see opportunities to support upcycling or repurposing of waste in their areas. Upcycling and repurposing are ways to recycle a product without having to break it down to the raw material it is made from. A challenge can be ensuring such activities happen on a sufficient scale to make a real difference; however, they can contribute to raising awareness, encouraging communities to re-think our concept of waste – and are often significantly less energy intensive than some types of recycling.



Upcycling is the process of refashioning or transforming by-products, waste materials or unwanted products into new materials or products of higher quality or value, e.g. furniture made from old fishing crates.



Repurposing is the use of a product or material for a different function than it was originally produced for. Repurposed materials are often associated with architectural design features and art projects, e.g. fishing nets for decoration, a small boat used for a flower bed.

TIP



Read Chapter 2 for support in putting these circular economy concepts into action!

Chapter 2: Putting the circular economy into practice

The circular economy is a concept that is gaining increasing recognition although it is still in its infancy in many areas. As a result, while it may be a central element in the local development strategy (LDS) of some FLAGs, in others, it might be present simply in the form of potential actions within other overarching (e.g. environmental) priorities.

The following chapter consists of five practical factsheets to help FLAGs apply circular economy concepts to their areas in a strategic way. Much of the planning involved will need to be done when developing the FLAG's LDS. However, as a living document, an LDS should be subject to ongoing reflection and we encourage FLAGs to consider how a more circular economy could help in achieving economic, social and environmental objectives.

Five main steps are particularly important:

1. Analysing the area's circular economy potential
2. Awareness raising to change mindsets and behaviour
3. Building on ideas and entrepreneurship
4. Building partnerships and industrial symbiosis
5. Rethinking business models and attracting investment

Factsheet 1. Analysing the area's circular economy potential

Because every area is different, there is no such thing as a standard package of circular economy actions that can be implemented everywhere. Each FLAG will have to identify the key issues and potential opportunities that are specific to its area.

Imagine setting up a factory to recycle fishing nets: in theory, it could transform plastic waste from old nets into a valuable material such as plastic beads. However, what happens if sufficient critical mass of old fishing nets does not exist in the area, or if there is no system for collecting the nets, or demand for plastic beads?

There *might* be viable solutions for such challenges, but the FLAG will only know by developing an **in-depth understanding of the area**. It is this analysis that will help a FLAG to know if a new recycling factory will minimise waste and create economic value in the area; or produce another unwanted product that can negatively impact the environment while wasting public funds due to poor contextual factors and, therefore, viability. Below, we provide some of the key steps for analysing your FLAG area's circular economy potential.

TIP



Make sure the FLAG board is fully involved in these three steps. Their combined knowledge of the area and its economy will be vital for identifying key issues and brainstorming potential solutions.

Key Step 1. Identify the **key issues**

- › What waste products and materials are **generated by the fisheries and/or aquaculture supply chains** in your area?
- › What other waste products and materials are generated in your area that **negatively impact fisheries or aquaculture and their eco-systems**?
- › What waste products and materials are generated by **other sectors that could benefit fisheries and/or aquaculture** in your area?
- › **Other** circular economy-related issues?

Key Step 2. Determine the **need for FLAG involvement**

- › How important is the issue? What is its scale?
- › Is it within the scope of the FLAG's strategy?
- › Are solutions already being developed?
- › Other factors determining the need for FLAG involvement

Key Step 3. Develop a list of **potential actions**

- › Awareness raising activities and/or training
- › Reducing the use of fossil fuel and other raw materials used at local level
- › Setting up systems to prevent plastic from entering the marine environment
- › Supporting the creation of new products (and supply chains) from organic fisheries waste
- › Encouraging research and technology transfer by creating bridges between fundamental research and its technological applications
- › Other

The role of the FLAG can be the direct implementation of actions as well as supporting and funding the development of projects by local private or public stakeholders.

Example table of issues and potential actions

	Key issues	Importance of the issue	Within FLAG strategy?	Solutions underway?	Potential actions and projects
Waste from fisheries/ aquaculture	No provisions for old and damaged fishing nets	Medium	✓ ✓ ✓	Storage facilities for nets but no actions to repair or recycle	1. Awareness raising among fishermen & port authorities
					2. Workshop to repair fishing nets and recycle plastic
					3. New company to make objects from recycled plastic
Waste from fisheries/ aquaculture	Build-up of large quantities of oyster shells	High	✓ ✓	No	4. Explore cooperation with nearby FLAG areas where net recycling already takes place
					1. Identify/support local manufacturers who could use this resource
Waste from fisheries/ aquaculture	Other	Low	✓		2. Work with shellfish associations to reorganise collection and transport of waste shells, etc.
					Other
Waste affecting fisheries	Plastic pollution in the sea	Medium	✓ ✓	Tourist board working with municipality	1. Get fishermen involved in existing initiatives relevant
					2. Liaise with relevant authorities to put in place measures for disposing of old fishing nets free of charge
					3. Fishing for litter project
Waste affecting fisheries	Run off from agriculture affecting water quality	High	✓ ✓	No	Other
					Other
Waste as an opportunity	Heat from production processes	Low	✓	No	1. Capture of warm water for tropical aquaculture
					Other

TIP



Be creative when brainstorming actions, without thinking about the feasibility. Focus on the impact that such solutions could have and how they could create added value in the FLAG's area. Studying the feasibility of the actions is essential but comes afterwards.

Key Step 4. Prioritise the actions to support

Depending on their potential impact and relevance within the FLAG's strategy, a decision will have to be taken on which actions to focus on. For each key issue, define how supporting different actions:

- > Could have an **environmental impact**: what will it have an impact on (fish stocks, cleaner beaches, better water quality, etc.)? To what extent?
- > Could have a **socio-economic impact**: what added value for the local stakeholders? Can it bring new revenue streams, better quality of life, better satisfaction in their work, etc.?
- > Are foreseen in the FLAG's **local development strategy**: are potential actions within the scope of the FLAG's strategy and objectives? If not, are the issues important enough to warrant adapting the strategy?

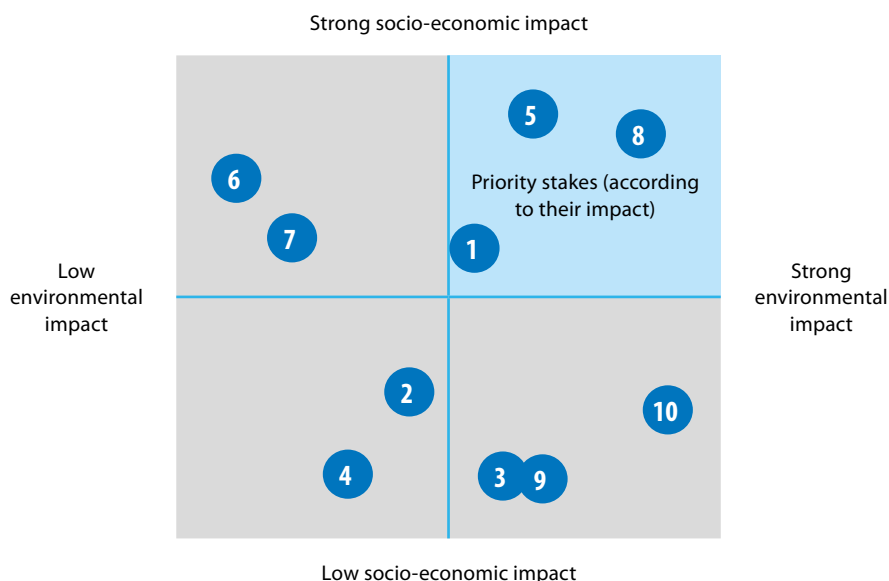
TIP



Including circular economy within a FLAG's strategy can help make a coherent link between different objectives, such as adding value (e.g. to under-exploited by-products) and environmental objectives (e.g. reducing pressure on local resources or tackling water pollution)

Although an area may have many important issues to solve, prioritization is fundamental. Otherwise, the FLAG runs the risk of spending a lot of energy and resources supporting too many small actions, with low impact. Using the following graph can help FLAGs decide where to focus their time and energy. Those issues placed in the top righthand corner emerge as those to prioritise in terms of the impact they could have.

Exercise to help prioritise actions according to their potential environmental and socio-economic impact

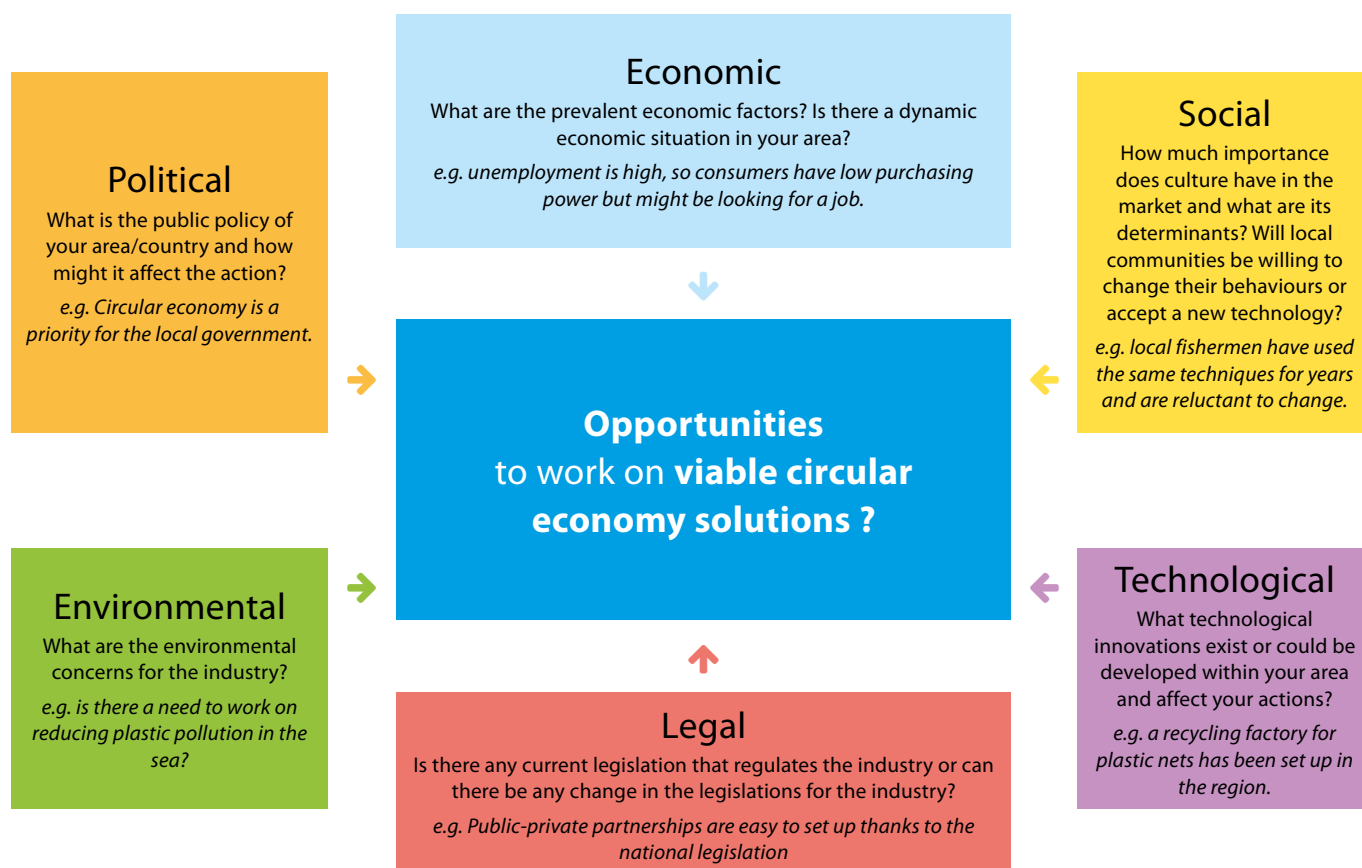


Key Step 5. Identify the **opportunities and challenges** for each priority action

Once priority issues have been established, it is important to start studying the **ease and feasibility** of implementing actions to address them. Identifying and mobilising the **right stakeholders** and helping them to seize the **right opportunities** will be essential for success.

To help do this, FLAGs may want to work through a “PESTLE analysis”¹⁸. It asks six questions related to the local context: political, economic, social, technological, legal and environmental.

Illustration of a PESTLE analysis



It might be hard for the FLAG staff to answer all of the PESTLE questions, in which case it is worth involving other local stakeholders, for example through a survey or a focus group. This will help lever in the expertise and knowledge of a range of local stakeholders, while raising awareness about circular economy issues and potentially obtaining other information, such as waste sources not previously identified. Moreover, involving stakeholders from the beginning of the process can lead to the improved involvement and mobilisation of stakeholders in the long-run: **knowledge, contacts and linkages** can all be developed.

This analysis should help define the opportunities and challenges related to the actions that could be implemented to address the priority issues. Is the local context favourable for their implementation? What are the obstacles that might need to be overcome?

¹⁸ For more information, see the PESTLE ANALYSIS' website: <http://pestleanalysis.com/what-is-pestle-analysis/>

Key Step 6. Research and analysis to identify the best opportunities

Once challenges and opportunities have been identified, more in-depth research is essential. This is the first step of a **feasibility study**; it will develop the ideas that have emerged into concrete solutions tailored to the specificities of the FLAG's area.

FLAG should consider:

- The **likely viability** of the actions to be implemented, for example:
 - How regular is the waste supply?
 - What are the volumes?
 - To what extent is there a market for it?
- The **expected environmental and socio-economic results** of the actions, for example:
 - How many tonnes of waste will avoid landfill or incineration?
 - How much water will it save?
 - How much revenue can be generated?
 - How many jobs can be created?

Once these questions have been answered, the FLAG should have a clearer idea of which types of actions to support and what outcomes to expect. With that information to hand, it becomes easier to engage local stakeholders to propose and implement solutions to the priorities identified.

The following four factsheets propose ways that FLAGs can raise awareness in their areas of circular economy issues; foster ideas and entrepreneurship; build partnerships and local synergies; and encourage new business models and investment to support a more circular economy.

Factsheet 2. Awareness-raising to change mindsets and behaviour

Once priority actions on the circular economy have been defined, it is important to raise awareness in the local community and to get the relevant stakeholders involved. The circular economy might offer a series of opportunities to many fishing and aquaculture issues – economic, environmental and social. However, people may not know about them or have the capacity to tap into these opportunities without targeted information and guidance.

FLAGs can play an important role in **making circular economy known and relevant for local fisheries communities** – and in helping them put in place the changes needed to make their economies more circular.

Key Step 1. Identify your target groups

A FLAG's plan to help its community transition towards a circular economy will involve a number of stakeholder groups. However, within a FLAG area, not everyone will be concerned by the priority actions defined by the FLAG. For example, if food waste by restaurants has been identified as a priority issue, it is essential to have restaurants on board, committing to a strategy. It might, however, not be necessary to raise awareness among boat builders.

- **Build ownership:** involve stakeholders and build ownership from the beginning. The FLAG cannot develop a circular economy by itself. The local community: fisheries professionals and entrepreneurs, the public sector and local consumers have to make it happen.
- **Link priority actions with key people:** unless there is a person or organisation willing and able to undertake the potential actions identified by the FLAG, the circular economy will remain just a "good idea on paper". Invest time in finding the people who can drive forward circular economy initiatives.
- **Get people together:** the circular economy depends on local collaboration and people like to work with people they know, trust and with whom they share similar values or objectives.

Potential stakeholders

- | | |
|--|--|
| ➤ Fishermen or aquaculture producers | ➤ Food industry (canning, processing, etc.) |
| ➤ Public sector (municipalities, port authorities, marine parks, etc.) | ➤ Seafood retailers (fishmongers, supermarkets, local restaurants, etc.) |
| ➤ Waste collectors | ➤ Other retailers (gift shops, clothes shops, etc.) |
| ➤ Environmental NGOs and associations | ➤ Manufacturers of fisheries, aquaculture and other equipment/machinery |
| ➤ Social & cultural NGOs and associations | ➤ Service sector, including tourism, etc |
| ➤ Research & educational centres | ➤ Others |

Prioritise:

- Who **most needs** to be made aware of circular economy initiatives and potential? (e.g. uninformed or reluctant stakeholders)
- Who is **essential** for the strategy? (Project managers, key partners, customers, etc.)

Key Step 2. Build consensus to do things differently

Two things are fundamental for people to believe in change:

- › Understanding the **need to change**
- › Seeing that something better is **possible**

FLAGs should bear this in mind when attempting to mobilise local stakeholders. They should, therefore, think carefully about *what* arguments (message) to present and *how* they deliver this message (via which channels?). Remember: getting people to change or do things differently is difficult; whoever is delivering the message (television or poster advert, public figure, you?) needs to be credible and persuasive.

Pick the best messengers!

- › **Invest in outreach and communication:** getting your message across to the right people is essential. If you don't manage to do this, you cannot effect change. Time must be dedicated to selecting the most effective ways to reach your different stakeholders, given the available budget.
- › **Adapt your channel to each target group:** FLAGs may place posters in strategic places or use targeted emails, local media channels, community meetings and many other communication channels. However, depending on who a FLAG is trying to involve, the cheapest and fastest way is often to **go and talk to them**.
- › **Find advocates:** depending on the stakeholders you want to mobilise, someone else might be more persuasive than you. Local fishing/aquaculture leaders might be better placed to convince fishermen and fish farmers to adapt their working habits; local public authorities might be better placed to engage with waste collectors or launch a public awareness campaign; celebrity chefs can influence consumer habits, etc. Working with local networks and well-known figures to broadcast a message can be very effective and often save a FLAG time and resources.

Get your message right!

- › **Point out what is not right** (e.g. pollution generated by production, costs of waste disposal, wasted resources and opportunities). Be concrete, give figures!
- › **Give proof that a circular economy can work:** present successful initiatives from other areas¹⁹, expected outcomes locally (short and/or long-term). Again, be concrete, give figures!
- › **Highlight how each specific stakeholder will benefit:** Show that you understand your stakeholders' activities and demonstrate how taking action can improve their business and/or wellbeing (e.g. reducing costs, simplifying waste management, generating added value, improving their environment, etc.). Be positive!

19 See FARNET [Good practices](#) and the presentations from the FARNET [seminar on circular economy](#)

Remember: 8 business motives to go circular!

ACCELERATE GROWTH	ENHANCE COMPETITIVENESS	MITIGATE RISK
<p>Generate: Create additional revenue from existing products and services</p> <p>Innovate: Spur innovation of new products and services</p> <p>Moderate: Reduce operating costs</p>	<p>Captivate: Enhance customer and employee relationships</p> <p>Differentiate: Distinguish from competition</p> <p>Integrate: Align corporate strategy with mission</p>	<p>Acclimate: Adapt business models and value chain relationships</p> <p>Insulate: Mitigate linear risk exposure</p>

Source: Circular Economy Practitioner Guide

TIP



A picture is worth a thousand words

A short video or great pictures can boost your message and make the circular economy easier to understand and believe in. A 2-3 minute video made by a professional can cost from €1 000 to €10 000.

From consensus to action

Ultimately, the concrete ideas for action must come from the local stakeholders. Once ideas have been put on the table and consensus achieved, generating and maintaining **momentum for long-term action** can be one of the biggest challenges when trying to effect change. In order to secure the buy-in of the organisations and individuals that can make a difference, FLAGs will have to work hard to make sure goodwill is converted into action and results.

- **Start with some “quick wins”:** short-term projects that deliver fast results can show how local action is making things better and is a good way to consolidate the consensus to act. Going forward, plan to deliver visible results on a regular basis.
- **Maintain knowledge exchange:** circular economy is a new concept in most areas and providing information (e.g. via social media, emails, videos, follow-up meetings, etc.) of how different projects are working out (successes, challenges and needs) can help local stakeholders feel part of the transition and offer opportunities for them to contribute.

TIP



Circular economy projects require social networks and social engagement. Building communities requires a constant driver and must, therefore, be an ongoing and long-term part of the FLAG’s strategy.

Key Step 3. Promote your circular initiatives

In a world of round-the-clock news that regularly features natural and man-made disasters, corruption and poverty, most people are receptive to stories of how we can build a better future and a more responsible society – especially when these come with novel ideas that contribute simultaneously to a healthier planet and entrepreneurship.

The circular economy is an inspiring topic and FLAGs should not hesitate to find imaginative ways to spread the message as broadly as possible in their local community. **The general public, as well as local enterprises and the public sector, should all know about the FLAG's work.** The table below offers some examples of how to reach these different groups.

Promoting circular initiatives

Stakeholder groups	Channels	Stories about...
The general public: local consumers, schools, tourists etc.	Local media, social media, community events, tourist information, school projects, etc.	Eating sustainably, buying sustainably, reducing litter locally, sharing platforms (e.g. for transport, tools, second-hand items, etc.)
Fisheries & aquaculture stakeholders	One-to-one discussions, sector-specific media, newsletters, etc.	New practices by other fishermen or aquaculture producers (e.g. savings made by investing in renewables or partnering with a company that can use traditionally discarded fish); a new, free waste disposal system for fishing boats, etc.
Other private sector companies	Local media, company events, B2B publications, distribution of promotional products	Opportunities for local manufacturers to use by-products from fisheries and aquaculture; new products for retailers to offer (e.g. from recycled fishing nets, fish skin scales, seaweed extracts)
Publicly funded bodies, including research	One-to-one discussions, local meetings & events, internal & community newsletters; events; research, etc.	Initiatives for better marine waste collection and reuse / re-purposing / recycling; research successes funded by the FLAG (e.g. into the use of organic fish waste for cosmetics)

Sharing stories of how others are making a difference to their local communities and reaping the benefits of a more circular economy can:

- Demonstrate that a more circular economy is possible
- Offer recognition to those putting it into practice
- Keep up the momentum of initiatives underway
- Drive customers to circular economy products, strengthening their profitability
- Encourage more people to get involved

Working with the media

The media can be a powerful ally to help you promote the circular economy locally. In the run-up to the [FARNET seminar on circular economy](#), the local FLAG was active in promoting the event. A press release, direct contact with different media sources and on-the-spot interviews helped secure more than 5 articles in the local and fishing sector press, while two radio programmes and 2 local television stations also covered the event, focusing in particular on the stories behind different circular economy projects.

This sort of coverage is fundamental for raising awareness in the community and encouraging a shift in mindsets and actions.

Factsheet 3. Building on ideas and fostering entrepreneurship

As a FLAG, you might have a clear vision of the types of actions that should be implemented in your territory to promote a circular economy. However, it is not always easy to find entrepreneurs to put these into action. Moreover, additional circular economy ideas can be generated, and initially proposed ideas adapted or improved, by involving a broad cross-section of community members.

Entrepreneurs from within and beyond the FLAG area have the potential to bring ideas, organisational capacity and investment to a circular economy strategy and there is much a FLAG can do to encourage ideas and support them to be put into action.

Key Step 1. Identify your area's entrepreneurial resources

Mapping out the entrepreneurial actors in your area will help identify the most relevant stakeholders to work with and assess the amount of direct support the FLAG might need to provide.

- **Existing or emerging entrepreneurs** that could be relevant for the FLAG's priority actions: look for dynamic fishermen and aquaculture producers, fishermen's wives, new start-ups, "fab-labs", impact hubs, and other individuals or organisations ready to invest time and money in circular economy initiatives.
- **Entrepreneurship-facilitating structures:** research all organisations that support entrepreneurship in your area, region or even nationally, e.g. incubators, coastal development agencies, chambers of commerce, regional programmes, universities, etc. These might help you to identify entrepreneurs as well as redirect potential entrepreneurs towards professional support.

Once potential entrepreneurs, support structures and/or investors have been identified, **contact them** to explore together the potential of launching, nurturing and funding circular economy initiatives.

What is an entrepreneur?

"An entrepreneur is an individual who pursues opportunities for financial or social gain, often at great financial risk... (they) create social and economic wealth through the creation of companies and jobs, as well as frequently innovating through the development of new products and services..."

Social capital has been an important factor in the development of entrepreneurs from Silicon Valley to Bangalore; social networks can influence access to information and resources and be a source of advice.²⁰

Many fishermen and aquaculture producers are already entrepreneurs, so they might just need the right incentives to invest in circular economy activities.

Econyl, **Bureo** and **Ecoalf** are companies that saw an opportunity to reduce and raise awareness around plastic marine waste and have built profitable businesses making consumer goods – from clothes to sunglasses to skateboards – out of plastic marine waste.

From fish skin to marine leather, France

Mariel Philips saw a business opportunity in discarded fish skin. After a study visit to Finland, organised by the **Arcachon FLAG**, brought the art of fish skin tanning to her local area, Mariel set up her company to make luxury marine leather.

FARNET Good Practice.

Key Step 2. Develop the circular ideas

Once awareness has been developed locally and stakeholders have been identified, the ideas proposed will need to be explored in further depth by the potential entrepreneurs and project promoters. The FLAG can organise a range of activities to support this process, it can also launch certain pilot actions itself. It is important to plant the circular economy seed within your area, even though it can take time before seeing results.

- **Help others to develop their ideas:** organise thematic working groups, a local competition/challenge, or other events to engage different stakeholders in actively developing their circular economy ideas. This could be combined with field trips to other FLAG areas and the promotion of FLAG funding for circular economy projects (e.g. thematic call for projects).
- **Start building solutions yourself:** sometimes it can pay off to start the process yourself, for example by launching a feasibility study for a specific action or running a pilot project. If the FLAG can demonstrate that a particular idea works and has the potential to be profitable, it will be easier to convince an entrepreneur to take it on.

Organising a hackathon – an example from Brest, France

🔍 “A hackathon is an event of any duration where people come together to solve problems”²¹.

FLAGs might want to organise such events to foster entrepreneurial ideas around the circular economy. Guidance on organising hackathons can be found at this [link](#).

If such events are already being organised in your area, tap into this opportunity as the **Brest FLAG**, France, did. They managed to get a circular economy challenge on the agenda of a hackathon organised by **Campus Mondial de la Mer** in the region's Engineering School and Research Institute, ENSTA Bretagne.

Here, a group of engineering students, supported by researchers and experts from France, Canada, Ireland, the UK and Belgium worked around the clock on “circular solutions to port waste”. This was one of 12 challenges in the Ocean Hackathon. After 48-hours of non-stop “hacking”, the “Brest FLAG team” presented a project to set up an online platform to link producers of different types of waste with those who could use it. [See the Ocean Hackathon video.](#)

TIP: Consider calling your hackathon-type event by another name! Not everyone knows what it means and in some FLAG areas, this might undermine participation.

Key Step 3. Connect and support your entrepreneurs

In order to be successful, entrepreneurs will usually need support and incentives. These should be adapted to the different stages of the project life cycle. Think to:

- **Build their knowledge:** facilitate knowledge exchange, organise field trips or training sessions, don't neglect legal aspects.
- **Ensure financial support:** organise and promote specific calls for projects, help project promoters find additional investors, work with local banks to facilitate borrowing.
- **Promote enabling conditions:** advocate for public policies that facilitate the circular economy, help promote entrepreneurial initiatives, launch communication campaigns.
- **Connect people:** use your network and knowledge to link ideas with technical solutions, link solutions with markets, fishermen with restaurant managers, entrepreneurs with support structures, etc.

TIP



Tap into the knowledge of experienced entrepreneurs. They know the local business environment better than anyone – and the challenges and success factors of launching a new activity.

TIP



Work closely with your public authorities. Entrepreneurs are more likely to seize an opportunity if public authorities facilitate their work.

Factsheet 4. Building partnerships and industrial symbiosis

The circular economy depends on collaboration between producers. It aims to maximise how efficiently we use materials, and this involves sharing resources and matching waste from one activity with input needs of another. Finding these synergies and building constructive partnerships at local level is fundamental.

Within the fisheries sector, the FLAG should be a key player in developing relationships between fishermen, aquaculture producers, industries, civil society and local institutions. This can be **at the level of a single initiative** such as setting up a supply chain for oyster shells, which will require the implication of various stakeholders. It might otherwise extend to developing such synergies as broadly as possible **across the whole FLAG area**.

In either case, once your FLAG has identified and supported the development of concrete ideas for circular economy initiatives, and once local entrepreneurs are ready to put them into action, additional partners may need to be mobilised and further synergies studied.



Industrial symbiosis is the mutually beneficial exchange of waste and by-products between different parties. It requires collaboration across stakeholders within a **relatively small geographic proximity** and can include: by-product exchange; utility and infrastructure sharing; and common service sharing²².

Examples of industrial symbiosis

- **By-products exchange:** CO₂ from industry captured to feed micro-algae for biofuel²³; heat from production for aquaculture and/or leisure; organic fish waste for pet food, cosmetics, fertiliser, etc.
- **Utility and infrastructure sharing:** sharing storage space and cooling facilities; sharing office space, e.g. FLAG staff based in the existing office of a fisheries cooperative or local municipality.
- **Common service sharing:** optimisation of transportation from landing sites to markets; collective anti-fouling service for a whole port; collective waste management in nearby factories from the same industrial zone, etc.

Key Step 1. Identify opportunities for partnerships

Not so many industries are actively working with others to capitalise on potential synergies in terms of resource sharing. Most industries naturally focus on their core business and might require external support to think outside the box. FLAGs can help identify and highlight these synergies, as well as bringing partners together. This starts with understanding what sort of material flows take place in the area and where there might be a will to innovate.

- **Improve the understanding of material flows around your area.** This is essential to being able to devise strategies to maximise these resources. Some industries might have documented their own flows, though it is unlikely that data from all relevant industries has been consolidated. Think about teaming up with local authorities and/or outsourcing a study, such as a Material Flow Analysis, in order to develop the knowledge needed and identify potential opportunities.

²² Source: [Circular Economy Practitioner Guide](#)

²³ More information [here](#) (French newspaper)

- **Present this knowledge to the local business community.** This can be used to raise awareness of the opportunities to build innovative, circular businesses. Don't forget to involve the public sector when promoting this information to business leaders! **Chambers of commerce**, for example, can play a key role in promoting the circular economy.
- **Get the business community to identify opportunities.** Given this knowledge, what opportunities do the experts and entrepreneurs see? These ideas will likely come with industry knowledge and ownership.
- **Identify a local representative or CEO** of a local industry that is motivated to work on this topic, open to innovation and flexible towards change.

TIP



Look for geographical proximity between potential partners and common issues or flows between industries.

Material Flow Analysis (MFA)



MFA involves the quantification and assessment of stocks and flows of matter (water, food, excreta, wastewater...) and substances (nitrogen, phosphorus, carbon or CO² etc.) in a system (municipality, port, region, etc.) during a defined period.

There are five key steps involved in MFA:

1. Identification of the key (material flow related) issues
2. Definition of the specific **area**, relevant **matter** and **processes** (i.e. activities that transform, transport or store materials and substances, e.g. fish processing, households, transport, or landfill) to focus on
3. Quantification of mass flows of matter and substances
4. Identification of weak points in the system
5. Development and evaluation of alternative scenarios and potential results

Source: "Practical Handbook of Material Flow Analysis" by Brunner & Rechberger (2004).

Key Step 2. Engage stakeholders and mature the idea

Having identified ideas and opportunities for synergies and partnership, next comes the reality check. Will the industries in question be open to change? Do they believe the opportunities identified are feasible and desirable to pursue? Are they willing to collaborate with others?

- **Facilitate dialogue between industries:** foster a will to improve resource efficiency, organise workshops on specific themes (e.g. waste water, solid waste, energy, etc.) for industries with geographical proximity, go to lunch, be creative!
- **Link existing technical solutions with industries**, for example, the **Opale Coast FLAG** connected a construction company that had the technology to produce filtering paving stones from shells with a local scallop producer.
- **Mature the idea and motivate key stakeholders into action:** help them explore common solutions – what might work and how? What won't work – and if not, why? Who else needs to be involved? What are the conditions? What resources and skills are needed?

TIP



Look for existing partnerships and collaboration among administrations and private companies; where there is already a local culture of cooperation, constructive exchange and dialogue is likely to take off quicker!

Key Step 3. Support partnerships towards action

Motivating stakeholders to organise their business differently is a great start. The next, and most important, step is moving from motivation to action. Depending on the motivation of the stakeholders involved, the FLAG might play a role to a greater or lesser extent in the following steps:

- **Finding a project coordinator and defining roles:** this could be one of the companies prepared to implement circular practices, a research institute, a consulting firm, a local public authority, etc. Coordination is fundamental and will help drive the process forward. As well as appointing a project coordinator, it is also very important that any partnership defines the roles of the other key partners, formalises the governance arrangements and prioritises actions. **Building trust** is key at this stage.
- **Supporting R&D and/or training:** local industrial sites might not have technical solutions to hand to work on their flows. Look at solutions implemented at national or international level. Associate research outfits to the project to develop the technical solutions needed and/or to train workers involved. Tap into the **NISP** (national industrial symbiosis programme) network.
- **Testing solutions:** testing a promising solution can help fight scepticism of stakeholders and lead to concrete large-scale implementation; initiate short-term easy actions. Launch multi-stakeholder, short-term projects responding to immediate interests that are easy to implement and low-cost. Don't wait until the end of the MFA to start small actions.
- **Scaling up and promotion:** encourage other companies to join the initiative; capitalise on new synergies which might emerge from the coordination developed; extend the scope of the initiative to include other ports or nearby areas; and increase civil society engagement in the process.

A FLAG is not expected to manage all these steps but can fit its actions to this process thereby stimulating and supporting the launch and/or strengthening and speeding up the process.

TIP

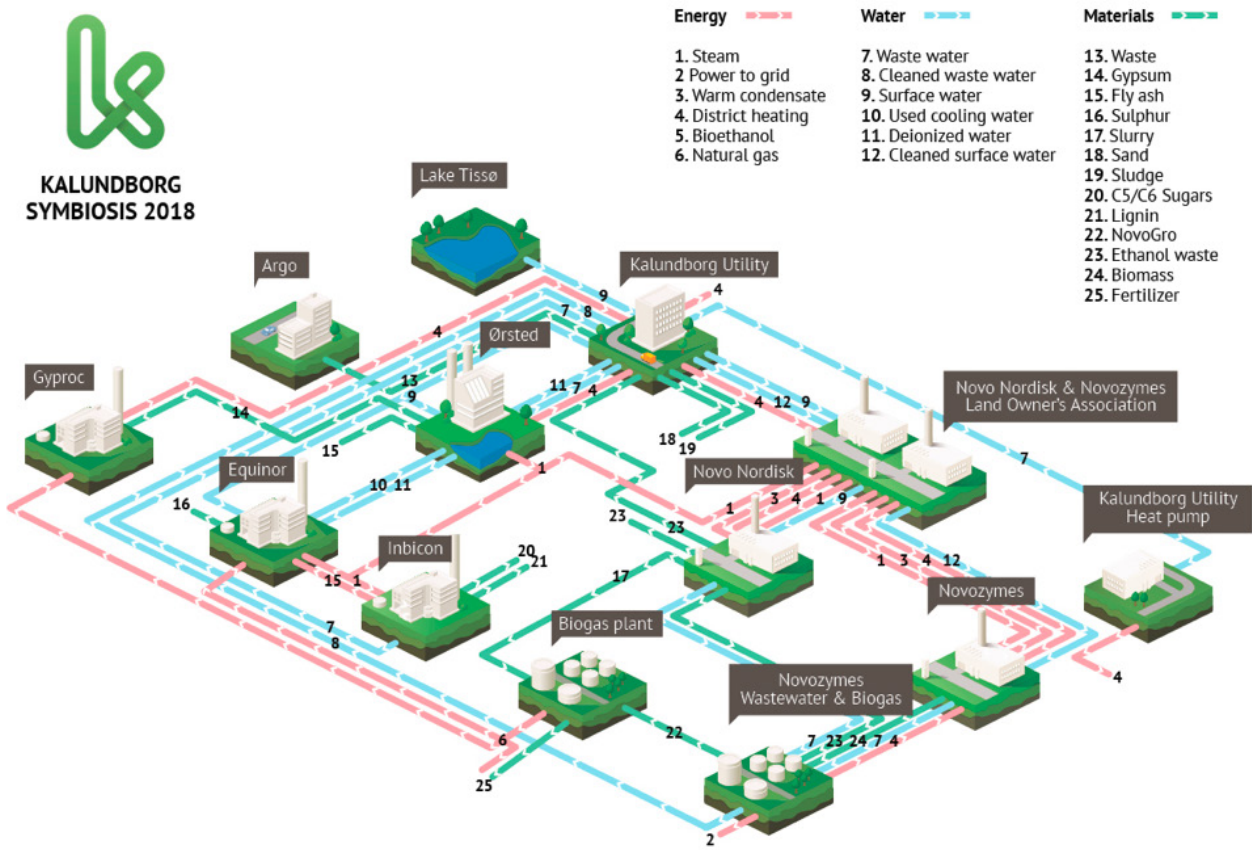


It usually takes 5-10 years to implement an industrial symbiosis. Plan well, involve the right leaders, help maintain the momentum and be patient!

A model of industrial symbiosis, Denmark

The Kalundborg Symbiosis is a partnership between nine public and private companies in Kalundborg, Denmark. Initiated in 1972, it has become a model for other towns looking to develop industrial symbiosis with a circular approach to production. As can be seen in the image below, the residue from one company becomes a resource for another, benefiting both the environment and the local economy.

Kalundborg, Denmark, a state of the art example of industrial symbiosis



Kalundborg symbiosis

Factsheet 5. Rethinking business models and attracting investment

Circular economy can't be reduced simply to environmental measures that save resources in companies. It involves **rethinking how companies do business**, and the development of their products (including the acquisition of materials needed; the consumption of energy and water; the sales and use of the product; and the management, reuse or sales of any waste or by-products) should be environmentally *and* economically sustainable.

Circular economy initiatives will have to generate revenue, manage costs and attract investment, just like a linear business, in addition to their environmental objectives. Developing a solid business model and securing the necessary financial streams is, therefore, essential.

Key Step 1. Building the business model

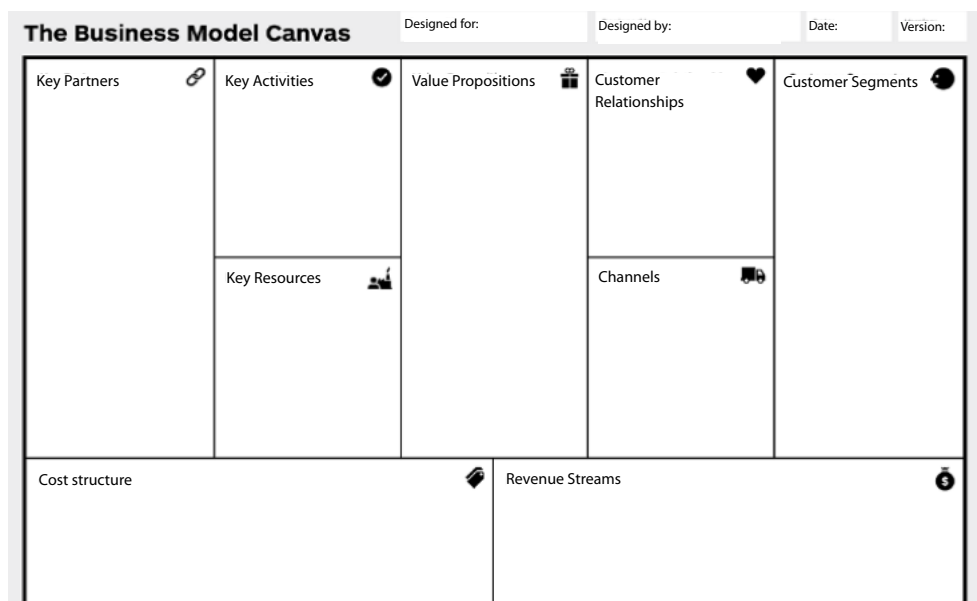
Some project promoters may be experienced entrepreneurs, while others might need support from the FLAG. In either case, the FLAG should be satisfied that a new circular economy initiative will be economically viable and sustainable in the long-term. In particular, they should:

- **Understand where the project fits in the value chain:** it is important that the project promoter has good knowledge of the sectorial value chain as well as the circular economy practices associated to each part of the chain. Is the project contributing to closing the loop with measurable environmental goals? Does it address the 3Rs, reducing, reusing and/or recycling materials used?
- **Make sure revenue will be generated:** does the project promoter understand their customers? Has he/she conducted a market analysis and demonstrated (with figures) that the project has potential? Has a revenue model been developed?
- **Ensure the resources and skills are there:** does the project team have the necessary skills, networks, markets? Are the right partners associated?

Business model canvas (BMC)

The BMC is an excellent tool to get a global vision of how a project will work and generate revenue. It is a widely used tool among businesses and investors²⁴.

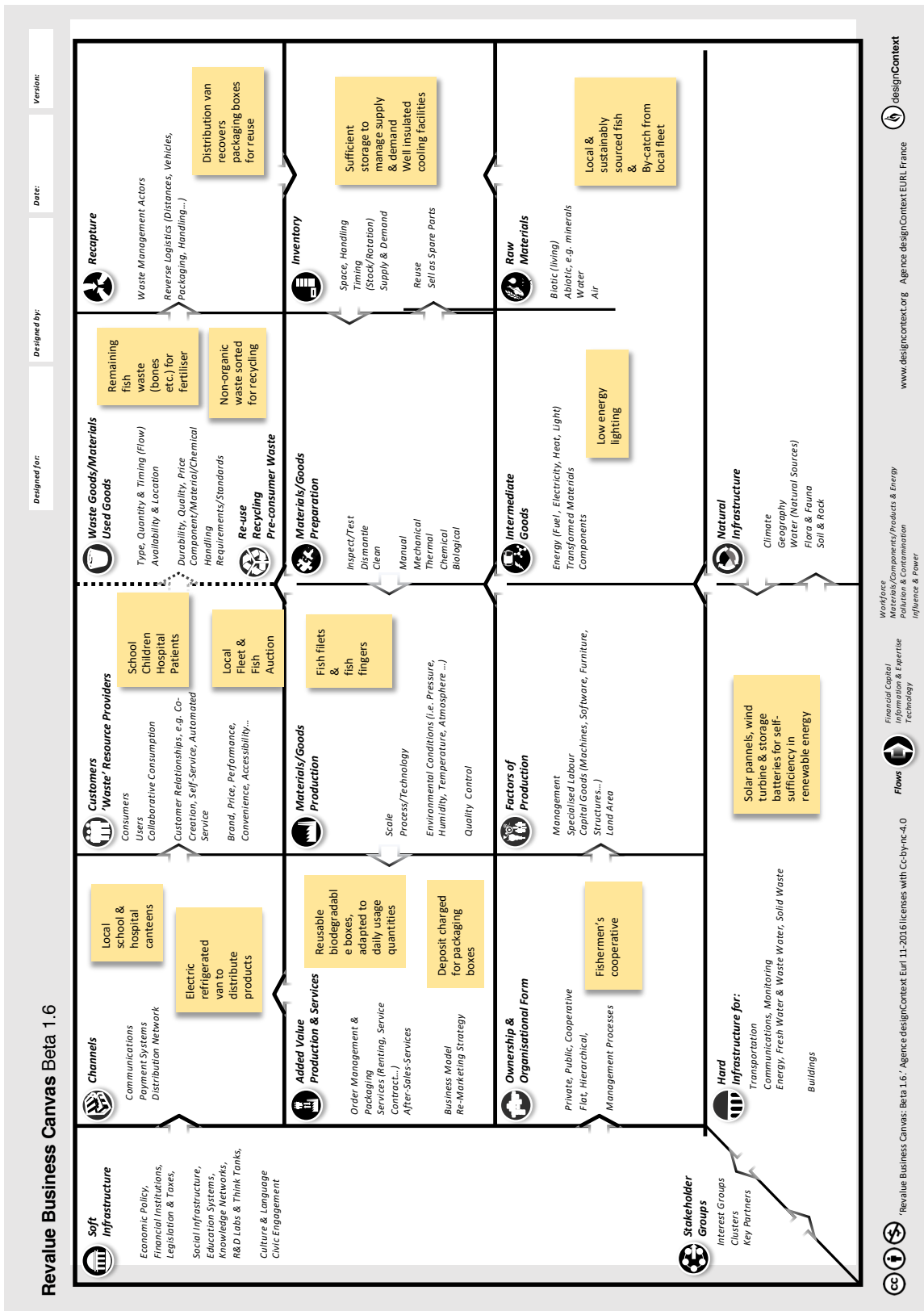
For a business plan checklist, see p.46 of FARNET Guide #12, [Boosting business along the fisheries supply chain](#).



24 The book [Business model generation](#) explains in detail how to design a good business model

More ambitious FLAGs or project promoters might like to use the following “revalue business canvas”, developed especially for circular economy projects. Some of the boxes have been filled in as an example (for a fish processing company); however, the clean template can be found [here](#) along with a [video explanation](#).

Revalue business canvas



Source: designContext

Test it! As with any innovative action, with many new circular economy initiatives comes an element of risk. Don't be afraid of failure! A FLAG's role is to encourage innovation which, by definition, means getting people to try new things and take risks. Once the FLAG is satisfied that measures have been taken to ensure the highest chance of success, it is time to test the idea and its business model and see what happens! Depending on the results, the project and business model may need to be adapted, or in some cases abandoned.

Key Step 2. Attracting funding and investment

In addition to the grant your FLAG might give to a local circular economy initiative, the project will probably need to attract complementary funding. Below are some ideas for project promoters and FLAGs looking to secure sufficient funding to put circular economy projects into practice:

- **Assess your needs and organise your resources.** According to your objectives and ambitions:
 - Develop a business plan and budget
 - Understand funders' expectations and identify which type of funding mechanisms would best fit the needs
 - Dedicate time to fundraising
 - Hire a business or financial consultant if necessary
- **Develop a network** of public and private funders: communicate with them regularly, build trust. The more diversified the funding sources are, the safer the project will be.
- **Set up a watch** to be sure not to miss any call for projects: scan relevant, including European Commission, websites, sign up to newsletters and alerts from designated platforms.

Potential funding resources: types and tips!

Donors: they donate their money and expect an **impact**

- **Examples:** public funding (European calls for projects, national or regional grants, local development agency budgets) or private donors (foundations, philanthropists, companies, NGOs).
- **Expectations:** clear responses and solutions to their priority issues and objectives.

TIP



Project promoters should work on their logical framework or “**logframe**” as many donors expect this as part of a funding application. Differentiate objectives from activities in your response, include figures and explain how you will achieve the expected impact. Don't hesitate to team up with other actors and FLAG areas for more impact.

Investors: they lend their money and expect to make a **profit**

- **Examples:** Impact investors, private equity funds, crowdlending platforms²⁵, local businesses, banks.
- **Expectations:** successful (or high-potential) projects or companies to invest in or to lend their money to. They will evaluate oral pitches and review business documents (business plans, proof of concepts, market analysis, return on investment, etc.) and indicators when deciding if they will invest.

25 Among others : [Babyloan](#), [Unilend](#), [Kunvi](#)

Crowdfunders: contribute to **support the project's aims**

- **Examples:** community members, philanthropists and other individuals or organisations that buy into the campaign's mission. They invest through crowdfunding platforms.
- **Expectations:** a "gift" in exchange for their money - it can be a product, a greeting card, or even just a thank you note on your website.

TIP



Crowdfunding platforms have dedicated teams to help you in your fundraising campaign, do not hesitate to ask for their advice.

Fishy Filaments project

Fishy Filaments is an initiative in the Cornwall FLAG area, UK, that takes old fishing nets and recycles them into 3D printer filament and plastic granules. Using two crowdfunding platforms: **Crowdfunder** and **Crowdcube**, they raised more than £200 000 to start the business.

Funders from 19 different countries – individuals, family funds, private investment funds, angel investors, etc. – contributed between £10 – £15 000 each to see this initiative succeed. Initial rewards were simply small 3D printed items, though, at a later stage, investors were rewarded with a share in the company.

FLAGs can be active in building contacts with potential investors: local businesses or other stakeholders that could be interested in investing in responsible ventures as well as organisations that have, or are likely to, put circular economy in their investment strategies (multinationals, equity funds, etc.).

By combining community outreach activities with dialogue, partnership building and investment, FLAGs have the opportunity to foster more circular and sustainable economies in fishing and aquaculture areas.

Making fisheries and aquaculture circular



Going circular involves daily action. What will you and your community do?

Making them circular...		
Monday	Production and capture	<ul style="list-style-type: none"> ➤ Implement sustainable fishing technique (nets, pole & line, etc.) ➤ Convert fish faeces into fertilizer ➤ Repair fishing nets and gear instead of throwing them away, ensure the maintenance of boats, buy eco-designed nets, find new uses for old nets and gear ➤ Use organic or sustainably-sourced food for aquaculture, e.g. by-products from other sectors, share boats with tourist operators, etc.
Tuesday	First sale	<ul style="list-style-type: none"> ➤ What alternative to plastic bags and polystyrene boxes? ➤ Find solutions to avoid wasting unsold seafood. Use waste (fish guts or scales) to create a new revenue stream
Wednesday	Processing	<ul style="list-style-type: none"> ➤ Reduce packaging as much as possible and source it from sustainable sources (recycled steel, biodegradable plastics, sustainable forest products) ➤ Find solutions to avoid wasting unsold seafood ➤ Maximise use of all parts (find alternative uses like pet food for fish, leather from fish skin, or roads – for oyster shells) ➤ Reduce the use of resources by enhancing industrial symbiosis or modifying processes ➤ Maximise use of waste, work in closed loops
Thursday	Transport	<ul style="list-style-type: none"> ➤ Maximise truck / plane / train filling capacity, choose electric alternatives, maximise energy efficiency
Friday	Consumption	<ul style="list-style-type: none"> ➤ Promote human consumption of low environmental impact species as alternatives to species at the top of the food chain, raise awareness of endangered species ➤ Recycle, reduce food waste, compost ➤ Enhance recycling chain emergence in order to reuse packaging waste discarded by consumer