



*farnet*  
fisheries areas network

# FLAG ACTION RELATED TO ALGAE



# An introduction to algae

It is not all seaweed! According to the European Committee for Standardisation (CEN), algae and algae-based products are **algal biomass, algae extracts or purified compounds from algae** which have been either **harvested in the wild** or **produced in cultivation systems**. While there are several uses for algae, the European Green Deal acknowledges the importance of algae as food and a sustainable and alternative source of protein.

However, current European production does not fully satisfy the European seaweed food products market which is growing at an estimated 7 to 10% annually. As a result, imported seaweed is more than triple that of European exports. As part of the Green Deal, the Commission's forthcoming 'algae strategy' aims to make the EU algae sector more sustainable and self-sufficient. This includes measures to increase European algae production as food, but also supporting the other numerous uses for algae including the production of animal feed, fertilisers, pharmaceuticals, and importantly, improving circular economies.

For these objectives to be successful, uptake by industry – both large and small – will be necessary. This presents numerous opportunities for the EU's fisheries and aquaculture areas and places FLAGs in a unique position to develop local action related to algae production. This leaflet offers **practical tips for FLAGs, project promoters and local stakeholders on how they can harness algae production in their areas** in line with EU's drive to support the sector.

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# Harnessing algae at local level

Fisheries Local Action Groups (FLAGs) are uniquely placed to harness and encourage the potential of algae at a local level. Diversifying fisheries activities in new sectors sits at the heart of many local development strategies, as does creation of more sustainable food systems and practices. While there are many algae-related activities which can be supported by FLAGs, **activities related to the production of algae** fall into three main categories:

## Harvesting wild seaweed

The harvesting of wild seaweed or 'macroalgae' presents several opportunities in FLAG areas given the abundance of what is a widespread, naturally occurring resource in most coastal areas of the EU.

The wild harvesting of seaweed as a source of food is an easily accessible opportunity for projects with a relatively small budget. 99% of European seaweed supply originates from wild sources and is typically used either as a meal component (an alternative to other protein sources), as flavouring or condiment, or as a functional ingredient (typically as a binding agent or coagulant).

Commonly used European seaweed species as food include Dulse (*Palmaria palmata*), Nori (*Porphyra sp.*), Wakame (*Undaria pinnatifida*), Sea lettuce (*Ulva sp.*), and Royal kombu (*Saccharina latissima*). Such species can be found across European sea basins and are particularly abundant in the Atlantic and North Sea basins.

Harvesting wild seaweed in FLAG areas can create new market opportunities for local fishers looking to diversify their activities or other members of the community looking to move into a sector which requires less outlay than many industries. In the estuaries of the Ría de Arousa FLAG area in Galicia, Spain, there is an abundance of edible seaweed species including wakame, sea lettuce and kombu. FLAG-funded start-up company *Algas La Patrona* collects and processes these seaweeds into fresh, dried, and preserved products to over 20 outlets across Spain. Globalised cuisine offers further opportunities for seaweeds such as kombu which are more commonly associated with Japan. Used as a condiment which imparts umami flavours, harvesting kombu in Europe offers access to growing domestic markets as well as export opportunities. (more info – [www.algaslapatrona.com](http://www.algaslapatrona.com)).

FLAGs have also been active in supporting the harvesting of wild seaweed used as a fertiliser. Family-run business *Donegal Seaweed*, funded by the North FLAG, Ireland, harvests the seaweed species *Ascophyllum nodosum*, before cold pressing it into a range high-quality plant and soil fertilisers. Adhering to a careful area selection and rotation policy allows for the strict and sustainable management of the area's natural resources and seaweed stocks. (more info – [www.donegalseaweed.com](http://www.donegalseaweed.com))



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## Cultivating seaweed

Cultivating seaweed differs from wild harvesting in that it involves the intentional growing and farming of seaweed. In its simplest form, cultivating seaweed consists of managing and expanding naturally occurring seaweed. More advanced forms of seaweed cultivation involve fully controlling the life cycle of the algae and introducing it to either a natural expanse of water or a cultivation plant.

One of the EU's early adopters of seaweed cultivation is the Netherlands, primarily due to its naturally flat topography and location on the North Sea, which has the right attributes for growing edible seaweed species. While there are no FLAGs in the Netherlands, the right natural resources and growing infrastructure offers opportunities for Dutch LEADER LAGs. Similarly, FLAGs operating in neighbouring Members States in the North Sea basin could capitalise on what is a growing industry in the area.

The vast majority of seaweed consumed or used in the EU comes from wild harvesting. With the demand for alternative sources of food, animal feed, fuel and livelihoods increasing exponentially, the cultivation of seaweed is one way of meeting increased demand while reducing dependence on wild resources. In 2019, PEGASUS produced a 200-page technical document which highlights the current state of European seaweed production and pinpoints the challenges and opportunities for its future development, many of which can start at the local level. The report offers several tips which FLAGs and local project promoters can use as an entry point to the sector. (more info – [www.phycomorph.org/news/pegasus-is-released](http://www.phycomorph.org/news/pegasus-is-released)).

In Portugal, the Mondego Mar FLAG has supported a research and development project *AlgaDepur* which focuses on the cultivation of river seaweeds using by-products from the region's aquaculture sector. While cultivating macroalgae produces new opportunities for economic development in the area, it also reduces the negative impacts of fish farming such as eutrophication. Algae cultivation removes the excess nutrients in the region's estuaries which meets the FLAGs objectives of redressing balance to the local environments, being more sustainable, and at the same time creating new opportunities for diversification and job creation (more info – [www.algadepur.com](http://www.algadepur.com)).

## Cultivating microalgae

The cultivation of microalgae is a form of aquaculture and involves the farming of species of algae. The vast majority of intentionally cultivated algae falls into the category of microalgae. While macroalgae (seaweed) cultivation is predominantly associated with food products, microalgae have more diverse uses including pharmaceuticals, cosmetics, biofuels, and fertilisers. As such, the cultivation of microalgae can offer FLAG areas economic, social, and environmental benefits.

Often the cultivation of microalgae go hand in hand with other forms of aquaculture, so it is of particular interest to FLAG areas with an already established aquaculture sector. Local businesses or project promoters looking to diversify their activities are well placed to capitalise on algae production.

In Spain, the Murcia FLAG has supported several projects related to the cultivation of microalgae. In one such FLAG-funded project, *Haematococcus pluvialis* is cultivated to obtain 'astaxanthin', a powerful antioxidant used in the cosmetics industry. The species *Dunaliella salina* is also cultivated in the region by *Dismasal*, a FLAG-supported company which derives compounds such as carotenes and omega 3, which are of high demand in the pharmaceutical industry.

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# Making the most of local algae resources



FLAGs can be instrumental in overcoming many of the challenges which may act as barriers to developing algae-related activities at local level. In recognising and building upon the opportunities associated with algae, FLAGs, via the EMFF can support diversification into the algae sector in much the same way that they do for developing new opportunities for fisheries communities in other industries, such as tourism and gastronomy.



By promoting algae as an area's untapped natural resource, FLAGs can nurture interest in the industry and build capacity among project promoters and stakeholders using similar methods as for fisheries and aquaculture. A starting point for FLAGs could be the encouragement of research and development into an area's potential for producing algae through conducting a feasibility study.



A lack of know-how, consumer awareness, knowledge and skills related to algae were cited by many FLAGs as a key barrier to the development of the sector in their respective areas. If opportunities are presented, FLAGs are well placed to balance interests among local stakeholders and mediate conflicts with other industries, thus addressing some of the most frequently mentioned barriers to the development and uptake of algae-related activities in FLAG areas.



Given the nature of algae production and its potential uses, cooperation between FLAGs and Leader LAGs may prove fruitful in the growing of the sector (e.g. the creation and development of supply chains for fertilisers and animal feed).



Making information available to project promoters is essential to the development of algae production at a local level. Understanding the algae resources available in a FLAG area, the interests of different stakeholders, and how algae production fits within the FLAG's wider local development strategy is an important first step to fostering growth in the sector. A feasibility study allows FLAGs to make this information readily available and is something several FLAGs have already conducted in France, Ireland, Sweden, and Spain. In the following section of this leaflet, further sources of information on algae are presented.

## Sources of further information

While not exhaustive, the following sources of information on algae production offer further ideas on how FLAGs can adopt and encourage algae production in their areas, from policy and networking to practical and technical guidance.

### 01. Farm to Fork Strategy ([www.ec.europa.eu/food/farm2fork](http://www.ec.europa.eu/food/farm2fork))

Sitting at the heart of the European Green Deal, the EU's Farm to Fork Strategy aims to make food systems fairer, healthier, and more environmentally-friendly. Part of Farm to Fork is the EU's Algae Strategy which aims to increase both the awareness of algae and its production as an alternative food source in the EU.

### 02. FARNET Support Unit ([www.farnet.eu/library/technical-reports](http://www.farnet.eu/library/technical-reports))

Through a survey of 208 FLAGs, the FARNET Support Unit has compiled extensive information on the algae-related activities taking place in the EU's FLAG areas. The report details the types and locations of projects related to algae across the Member States implementing fisheries CLLD under the EMFF. As well as offering ideas for potential projects, the report also provides FLAGs and project promoters points of contact for cooperation on algae-related activities.

### 03. Seaweed Harvest Holland ([www.seaweedharvestholland.nl](http://www.seaweedharvestholland.nl))

Seaweed Harvest Holland is a cooperation between one of Europe's largest seaweed producers and Europe's largest wholesaler on products based on seaweed. Through several projects, the organisation is a good source of information on most aspects of seaweed production. Funded by the European Regional Development Fund, Seaweed Harvest Holland cultivates seaweed for food as well as use the non-edible by-products for other uses such as sustainable bio-coatings used in the chemical industry.

### 04. ValgOrize ([www.interreg2seas.eu/en/ValgOrize](http://www.interreg2seas.eu/en/ValgOrize))

ValgOrize is an Interreg funded technological and social innovation project which brings together stakeholders from three Member States (Belgium, Netherlands, and France) and the UK. The aim of the project is to establish an expertise platform that integrates all aspects of the algae supply chain (growth, processing, profiling, marketing) with a focus in small to medium size businesses. The platform is a good source of knowledge on both algae production, but also on transnational cooperation associated with algae-related activities.



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