SEAWEED for EUROPE

ACCELERATING THE SCALE UP OF A SUSTAINABLE SEAWEED INDUSTRY

SIG Seaweed
INDUSTRIAL BIOTECH NETWORK NORWAY

November 26 2021

Agenda

- Seaweed for Europe at a glance
- Perspectives on 2030 European market potential
- Licensing toolkit
- Investor memo
- Q&A

Seaweed for Europe successfully went live in June 2020

About 90 members spanning over 16 countries are joining forces through Seaweed for Europe

Scotland
Seaweed Farming Scotland, Sustainable Mooring Solutions, Oceanium, KelpCrofting, SAMS, The D'Arcy Thompson Simulator Centre

Ireland
THIS IS SEAWEED

England
Ocean 14 Capital, Notpla, finance earth, Biome Algae Ltd., Cornish Seaweed, Deep Science Ventures, Algae-UK, Lloyd's Register Foundation, Sunridge Partners, Norfolk Seaweed, Dendrityca

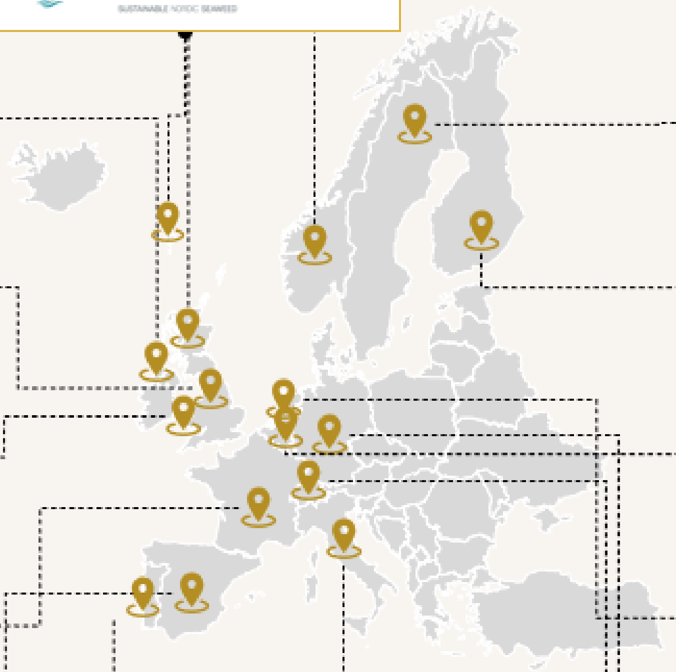
Wales
SA, Seas The Opportunity

France
CREADEV, Science Ethics, WealSEA, ALGAMA, Algaia, BNP PARIBAS, ERANOVA, nuuo, Station Biologique de Roscoff

Spain
HQ Seaweed, SEASTAINABLE VENTURES

Portugal
ALGA+, BlueBioValue

Färöer
OCEAN RAINFOREST



With interests in Europe
The Meloy Fund, AMERRA, The Nature Conservancy, kelp blue

Italy
JAVA BIOCOLLOID

Norway
Katapult Ocean, REV Ocean, SINTEF, blueC, Orkla, Seaweed Solutions, SATPOS, Fynd, Seas of Norway

Sweden
V0LTA GREENTECH

Finland
ORIGIN BY OCEAN

Belgium
ASTANOR VENTURES

Netherlands
Seatech, Green Marine Farming, DOEN, The Seaweed Company, Barentz., Hortimare, SeaweedTech

Germany
OCEANS 2050, Nordic Oceanfruit, ALGEN LADEN, Fraunhofer, SUN Institute

Switzerland
ÜBERMORGEN, SUS.lab, Investment Circle

SEAWEED for EUROPE

The coalition is co-chaired by three charismatic and experienced leaders

Maria Damanaki

Maria is the principal advisor to the Paradise International Foundation and a senior ocean advisor to SYSTEMIQ.

Previously Maria led the Global Oceans programme at The Nature Conservancy as Managing Director until mid-2020. She was European Commissioner for Maritime Affairs and Fisheries from 2010 to 2014 and a member of the Greek Parliament for 15 years.

Maren Bauer

Maren is the founding partner of Fynd Ocean Ventures, an ocean-focused investment fund.

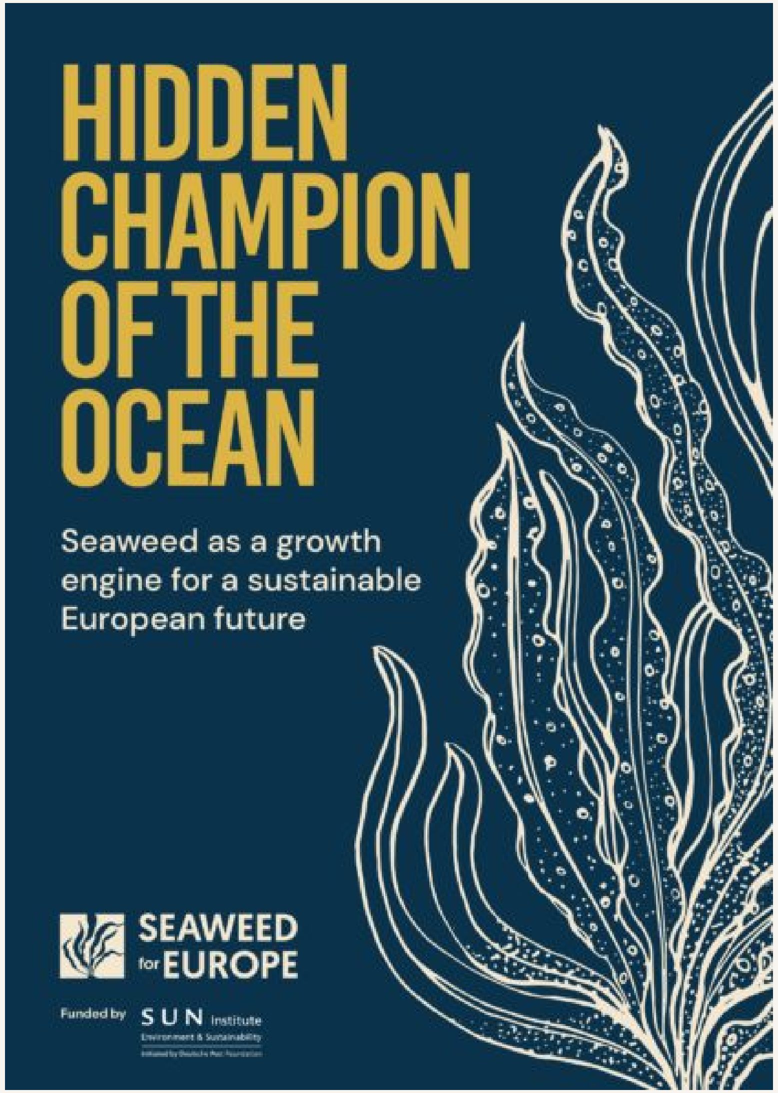
Previously Maren created Katapult Ocean in 2018, an accelerator based in Oslo supporting sustainable ocean ventures. Within her work she built a pipeline of over 1300 impact ocean start-ups and deployed capital into 22 such start-ups from 14 countries.

Vidar Helgesen

Vidar is currently the Executive Director of the Nobel Foundation (Nobel Prize).

Previous roles include being the Special Envoy for the Ocean of the Norwegian Ministry of Foreign Affairs and Norway's former State Secretary in the Ministry of Foreign Affairs, Minister of European Affairs and Minister of Climate and the Environment.

We published a first report a year ago



Hidden champion of the ocean - 2020

Seaweed as a growth engine for a sustainable European future

- **Quantification of the market potential, expected employment and environmental benefits** of a European seaweed industry by 2030
- **Principles to guide a the scale up of a sustainable, resilient and fair industry**
- **Barriers and priority areas to unlock the potential**

“The ocean holds tremendous opportunities for boosting jobs and the economy while at the same time helping and healing the planet. This report highlights the new, sustainable business opportunities that seaweed can represent, and I welcome this contribution to increasing our awareness of ocean health and wealth.”

Erna Solberg, Prime Minister of Norway and Co-Chair of the High Level Panel for a Sustainable Ocean Economy

Vincent, A., Stanley, A. and Ring, J., “Hidden champion of the ocean: Seaweed as a growth engine for a sustainable European future”, Seaweed for Europe, 2020. Picture credit: Thomas Haugersveen/Statsministerens kontor

SEAWEED for EUROPE

Hidden Champion at a glance

Seaweed (macroalgae) provides a range of product applications...

- Animal feed
- Food
- Pharmaceuticals & nutraceuticals
- Additives
- Bio-packaging
- Cosmetics
- Valorisation of ecosystem services
- Biostimulants
- Biofuels

...which could scale the European seaweed industry,...

€9.3bn potential market value by 2030

(of which **30%** supplied by seaweed grown in Europe)

...creating significant environmental benefits...

Mitigation of **>5m t**[1] of CO_2e emissions p.a.

Absorption of **20,000 t** of nitrogen **2,000 t** of phosphorus from the ocean p.a.

Provision of **ecosystem services** (food, habitat, nursery ground for marine species)

No need for freshwater, fertiliser or cleared land

...and strong social impact.

Creation of **115,000 jobs** for different skill and experience profiles

Revitalisation of coastal communities

Improvement of diets and general **health**

Hidden Champion at a glance

Europe is perfectly suited for such a scale up.

Ideal growing conditions
with nutrient-rich, cold waters

Burgeoning innovation community
including start-ups and SME players across the value chain

Existing and fast-growing demand
for seaweed-based products and ingredients

Strong alignment with European Green Deal
objectives and priorities

To deliver this potential, the nascent European seaweed industry must accelerate and significantly grow its production capacity.

From
~300.000 t
of fresh weight seaweed produced today

to
>8m t
of fresh weight seaweed produced in 2030

Hidden Champion at a glance

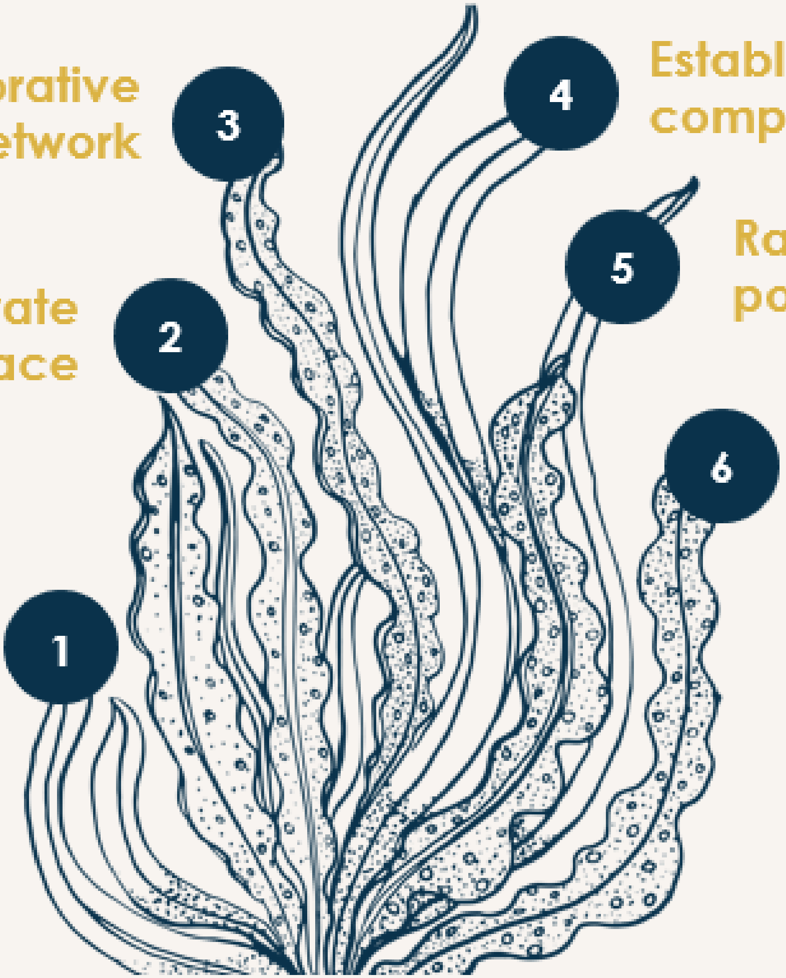
By following five key guiding principles, the industry can become a pioneer for green and equitable growth and play an integral part in our "new normal".

- Embrace a system view
- Make the system resilient
- Share benefits fairly among stakeholders
- Be guided and informed by science
- Measure and monitor success using holistic metrics

Targeted action in six priority areas can put this industry on the right track to fully unlock this promising potential.

1. Optimise seaweed farms licensing process
2. Attract (public and private) investors in the seaweed space
3. Create a strong and collaborative stakeholders' network
4. Establish robust safety standards and comprehensive certification system
5. Raise awareness on the benefits and potential of seaweed
6. Leverage science to accelerate innovation

Seaweed for Europe is actively working on supporting the industry



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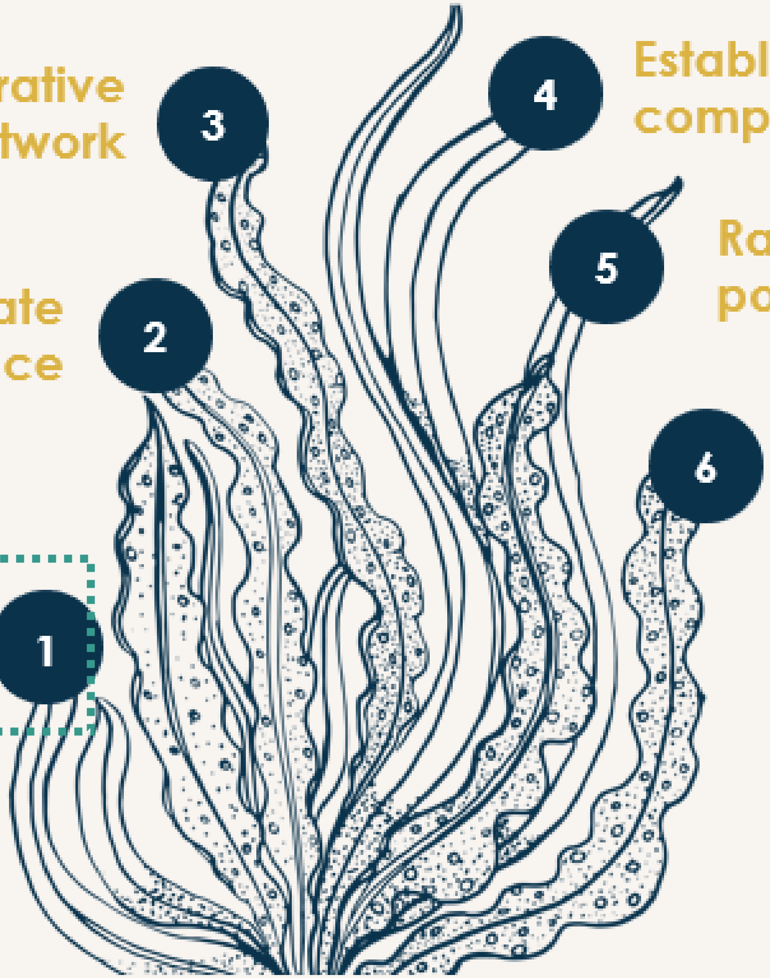

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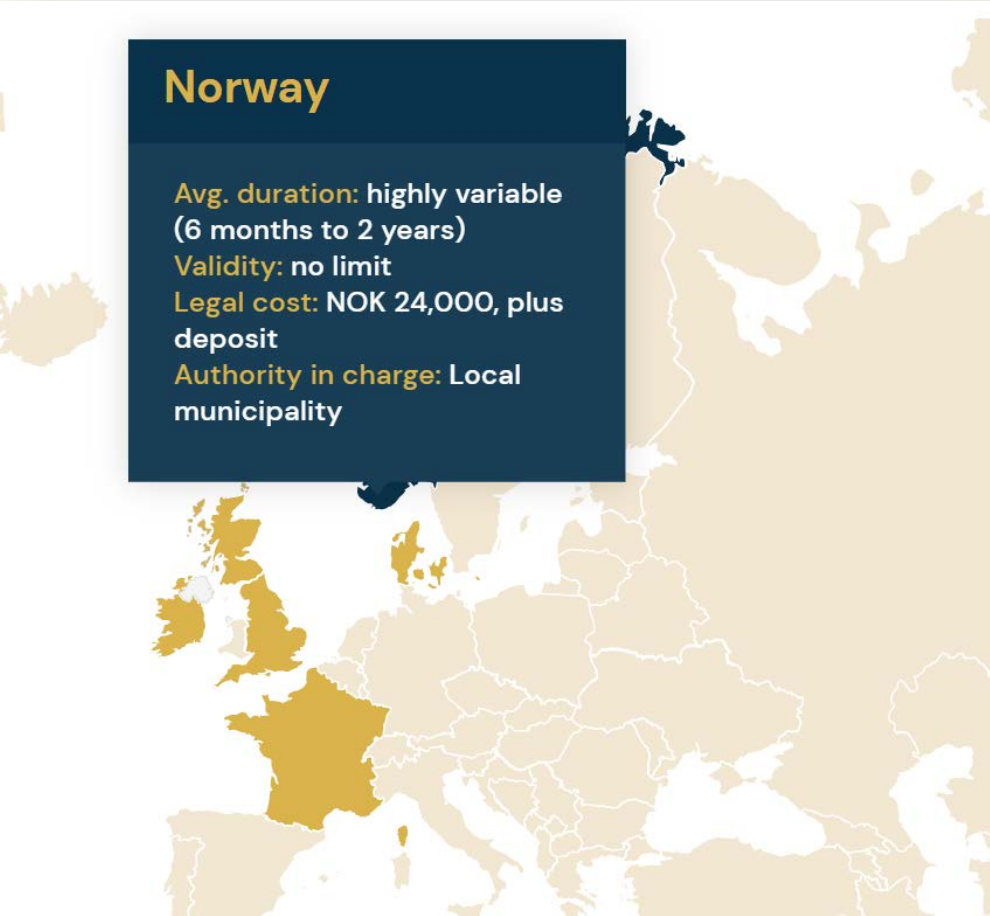
Licensing toolkit at a glance

Seaweed for Europe’s Licensing Toolkit

Our Licensing Toolkit is a central information hub that equips you as a future seaweed farmer in Europe with substantial licensing insights to facilitate the kickoff of your farm. This toolkit is meant as a supporting resource for future seaweed farmers and the contents of this toolkit do not constitute legal advice and are provided for general information purposes only. Whilst we endeavour to ensure that the information and contents of the site are correct, no warranty, express or implied is given as to its accuracy and we do not accept any liability for error or omission.

Content of the toolkit



Licensing toolkit at a glance – Norway deep dive

Process

Process Phase	Duration	Overview of tasks (expand phase for details)
Preparation	2-4 months	**Project definition** including location, target size, type of equipment and techniques, potential impacts, etc. **Pre-engagement with stakeholders** is not compulsory but highly recommended **Documentation preparation** to submit your application
Public consultation & licence draft	3-6 months	**Application validation** by the county and relevant ministries **Advertisement and public consultation** within the local municipality **Governmental validation** during which several governmental authorities validate your application **Remediation / address feedback** by the respective governmental agencies **Licence draft including conditions** by the respective authority
Installation		**Licence granted** by the respective municipality **Pre-installation** during which you need to pay a deposit **Installation** of your farm within the parameters of your granted licence

Licensing toolkit at a glance – Norway deep dive

Preparation — 2-4 months

Project definition including location, target size, type of equipment and techniques, potential impacts, etc.
Pre-engagement with stakeholders is not compulsory but highly recommended
Documentation preparation to submit your application

Process phase	Duration	Key tasks	Challenges
Project definition	2-6 weeks	• Understand the current land use plan of the envisioned site of your seaweed farm. • Define the project including location, target size, type of equipment and techniques to be used and create a conceptual farm sketch. • Assess the farm's expected impacts on the environment, natural resources, and social impact.	• If the land use plan does not designate the current area of your envisioned seaweed farm as an aquaculture area, you will need to apply for a dispensation of the land-use plan. To do so, contact your local municipality. • Consider using the Directorate of Fisheries' interactive map, which provides an overview of marine activities in Norway to find an appropriate farm location.
Pre-engagement with stakeholders	2-6 weeks	• Pre-engagement with local stakeholders is not mandatory, but highly encouraged since a local objection can block your licence application.	• Plan to reach out to local interest groups, like fish farmers, fishers, boating- and homeowners associations. • Engage your local authorities early on to get clarity on the parties that will be involved in the review of your licence application. • The application must be in line with the requirements imposed by local authorities. Since the application form is not seaweed specific, you will need to leave out sections that do not apply to seaweed farmers, and instead describe your appropriate, seaweed specific answers to the questions in the application's blank

SEAWEED for EUROPE

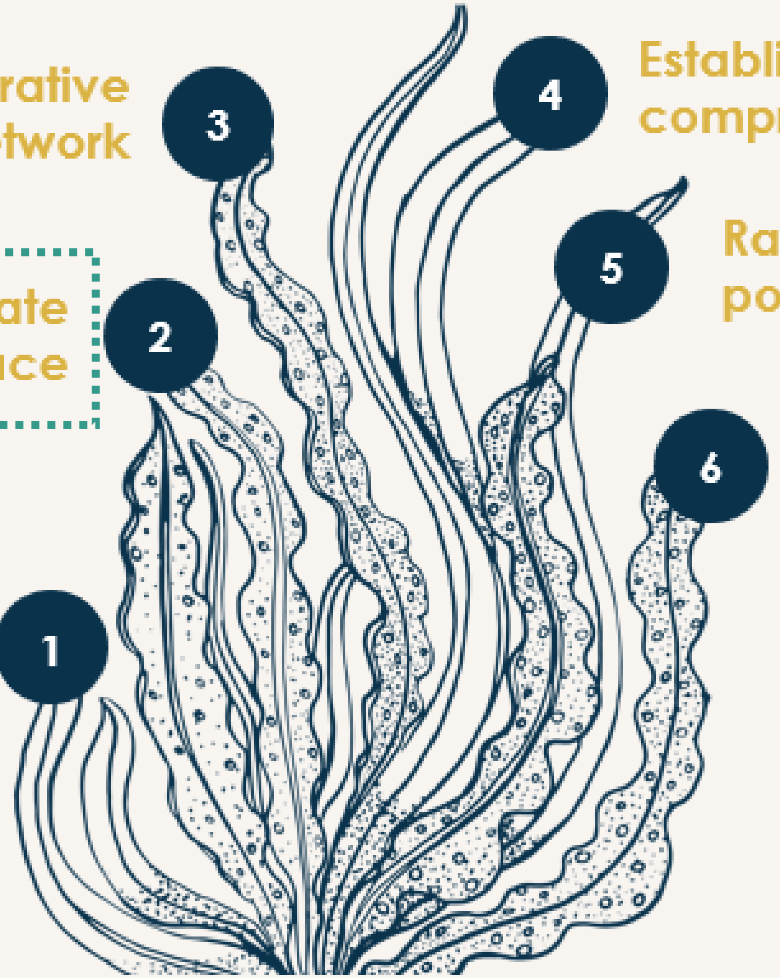
Licensing toolkit at a glance – Norway deep dive

Process

Key resources

Prepration	Public consultation & licence draft	Installation	General marine policies and regional guides
Map of marine activities Aquaculture permit application form Guidance on the Aquaculture application form Seaweed and Algae cultivation overview including relevant forms			Regulations on permits for aquaculture of species other than salmon, trout and rainbow trout (Forskrift om tillatelse til akvakultur av andre arter enn laks, ørret og regnbueørret)

Seaweed for Europe is actively working on supporting the industry



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We just published an investor memo to help raise awareness about investment in seaweed

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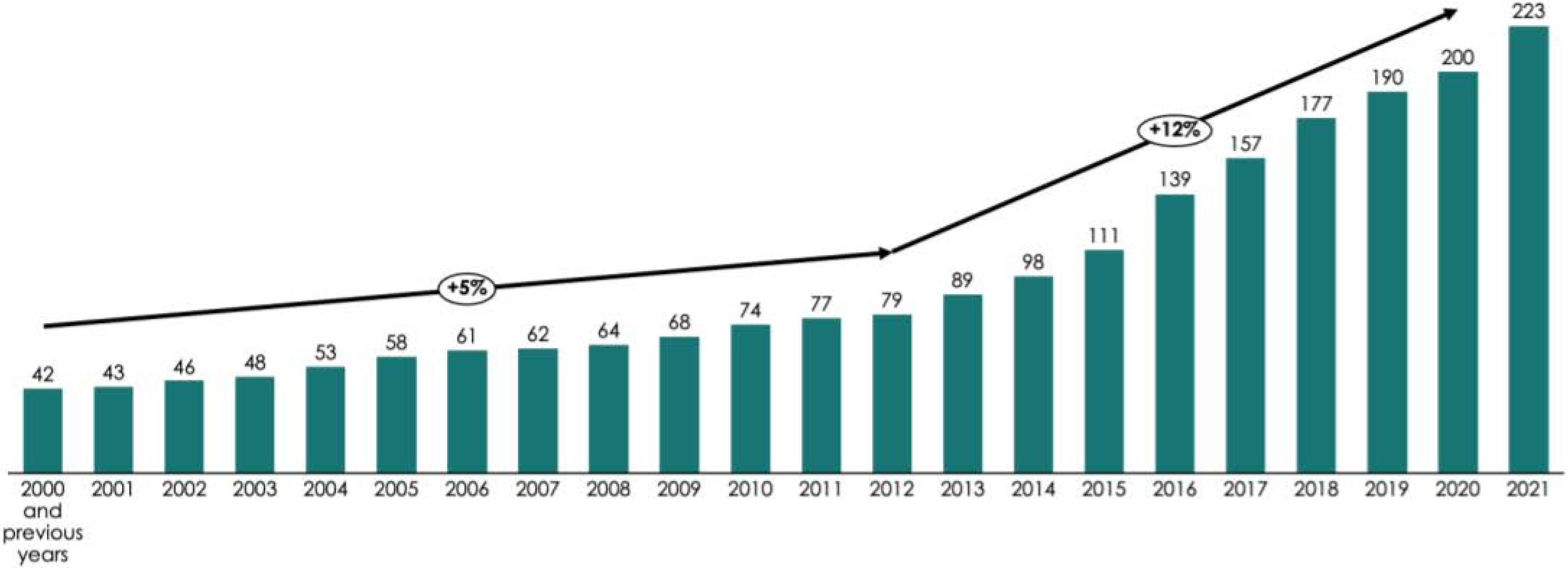
The number of seaweed innovative start-ups and SMEs has almost tripled in Europe in 10 years

Pipeline breakdown by companies' year of creation[1]

(accumulated number of companies, within the 223 established companies and start-ups)



Note: Within the 223 established companies and start-ups in Europe screened by the Seaweed for Europe team. Data sourced directly from companies' website when available, or from their LinkedIn and/ or Crunchbase profile. Founding date information was not available for 23 companies.

Most of seaweed companies are concentred in a few European countries

Pipeline breakdown by geographic region
(within the 223 established companies and start-ups)

- **77%** of European-based companies reviewed are in **6 countries**
- **65%** of European-based companies reviewed are in countries surrounding the **North Sea**

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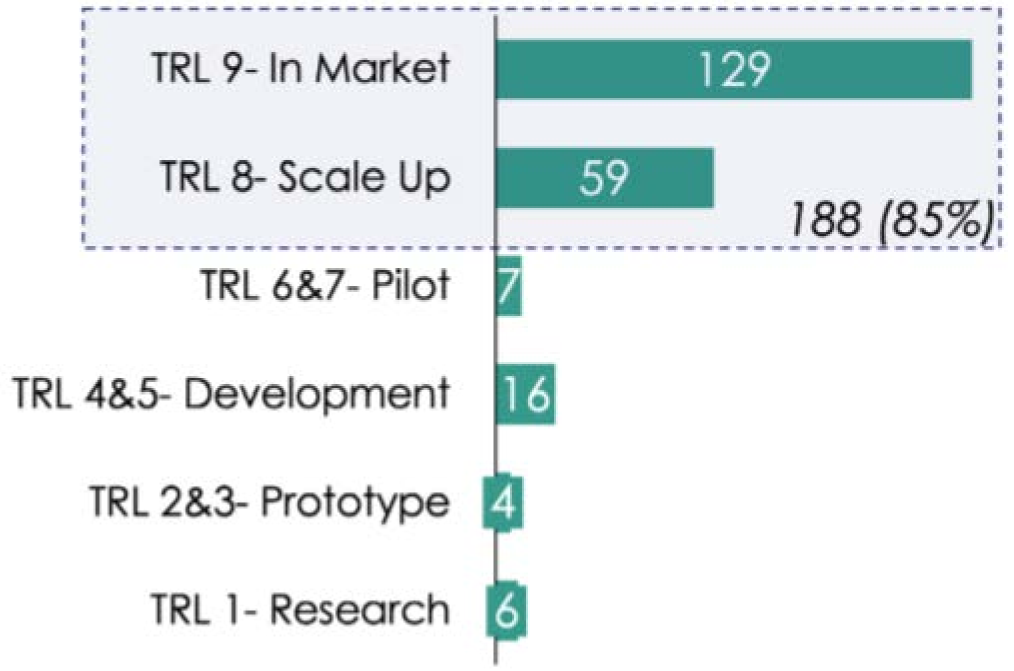
The European pipeline is already out of the lab stage

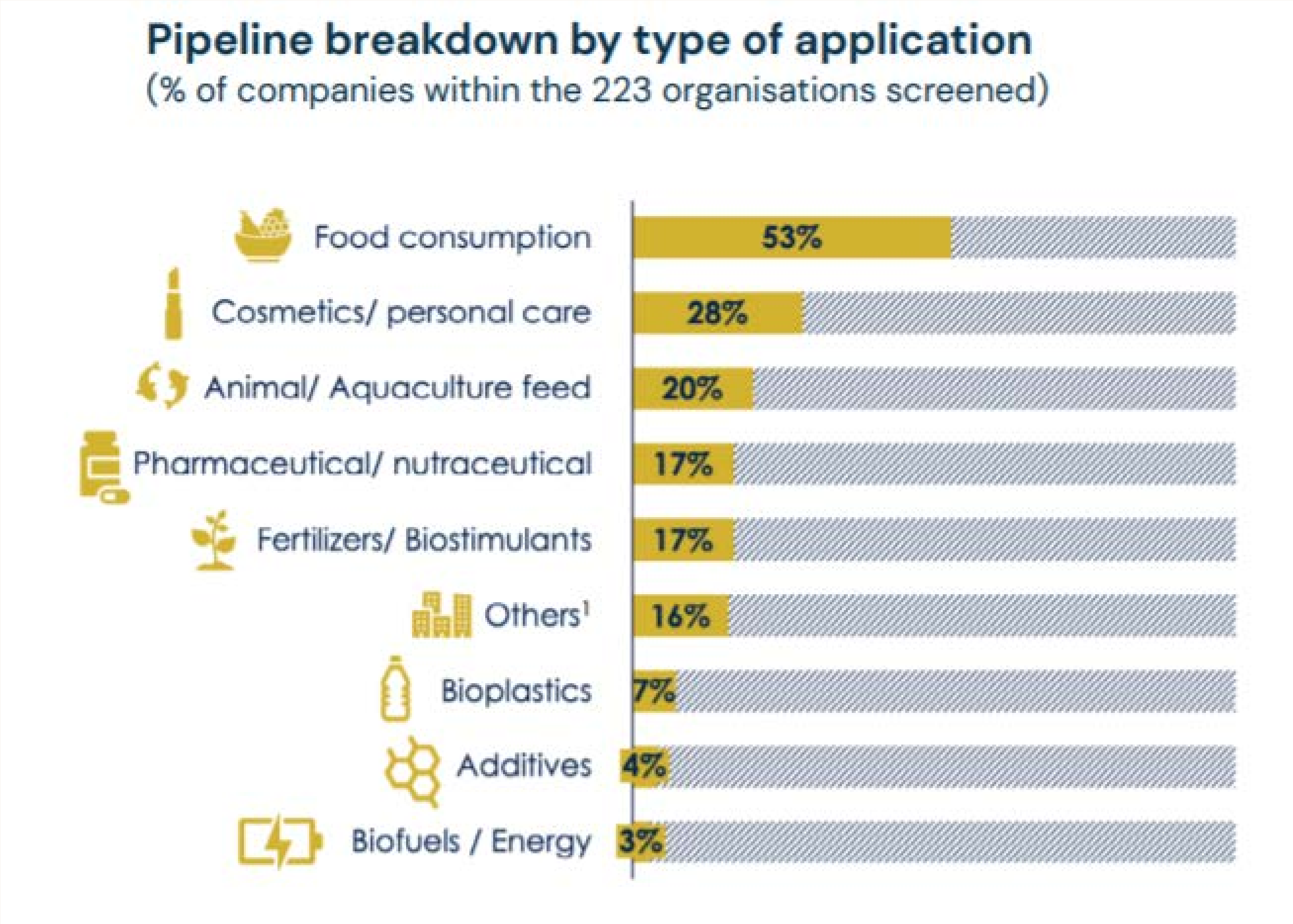
Pipeline breakdown by TRL (Technology Readiness Level)
(within the 223 established companies and start-ups)

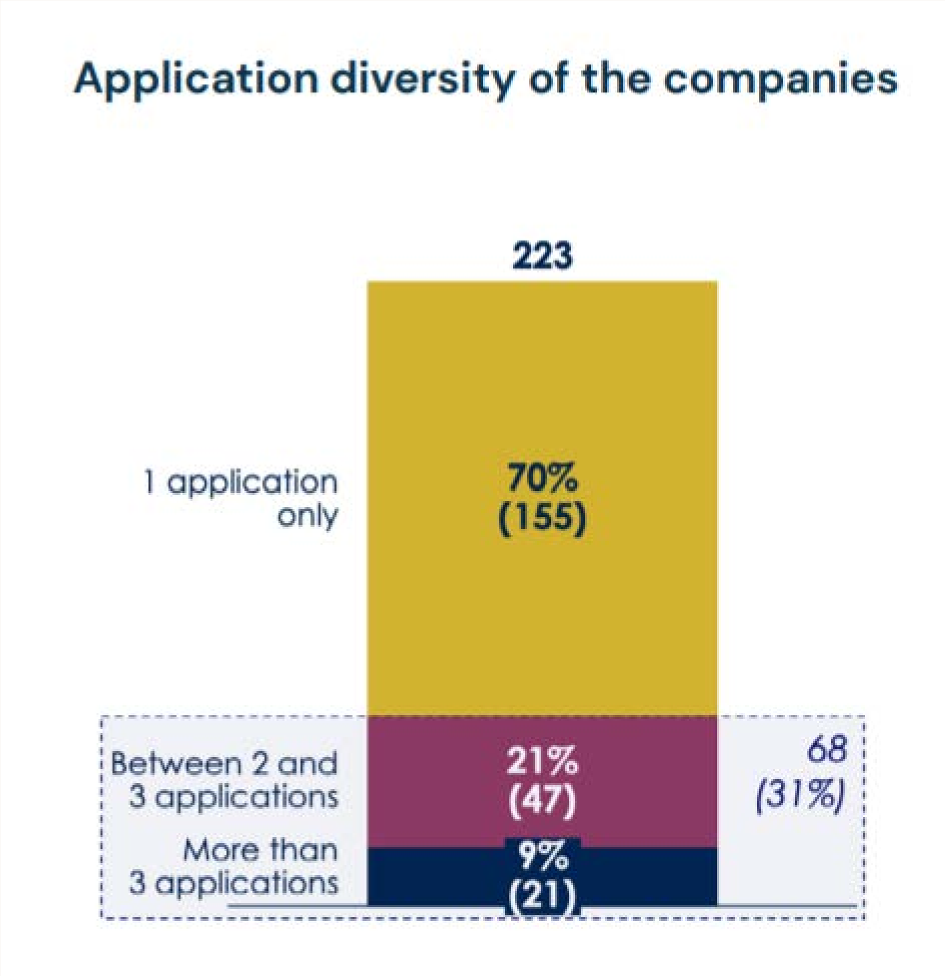


Note: Within the 223 established companies/start-ups in Europe screened by the Seaweed for Europe team.

- **85% of companies reviewed have an advanced TRL (>8)**

We observe a growing diversity of applications





Number of investments in the European industry are on the rise

Other analysis you can expect to find in our upcoming investor memo!

- Value chain mapping
- Vertical integration analysis
- Profile of investors in the seaweed space
- Business environment (political, civil society, off-takers, etc.)
- Etc.

SEAWEED for EUROPE

Visit our website!

THANK YOU!

Contact: seaweedeurope@systemiq.earth

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