

*Development of a European seaweed strategy*

*Status European Atlantic basin*

*Franck Hennequart*

*Director for Research & Innovation, ALGAIA  
Associate Director SEANEO*

# Marine activities in the European Atlantic basin

- Atlantic basin of Europe surrounded by Iceland, Ireland, southwest of UK, France, west of Spain and Portugal
- Almost 13 000 Km of coastline in total from shallow to deep areas (off shore)
- Most of the areas included in the European Natura 2000 sites (control of activities)
- Main activities today: by far, fisheries, ship transport, tourism (Yachting), strategic military
- Fisheries activities in decline, some oil and gaz, wind farming starting to pick up
- Strong scientific actors in the seaweed sector
- Well established Seaweed Industry (Hydrocolloids: more than 50 years) in France based on collect ; Ireland, Spain, Portugal and Iceland also traditional industry



# European Atlantic basin: Technological status

- Active main seaweed RTDs:

Marine and Freshwater Institute, Matis... (Iceland)

Martin Ryan Marine Institute, NUIG, TEAGASC ... (Ireland)

IUEM-UBO, UBS, CNRS Roscoff, MMS, CEVA, BOREA, IFREMER... (France)

IOS Seaweed Culture Center, FYBOA U. Malaga, UVigo... (Spain)

CIIMAR, CCMAR, CESAM... (Portugal)



# European Atlantic basin: Technological status

- **Growing collaboration between RTDs and industries** with **increasing pilot** capacities for development
- Topics studied: Taxonomy & Genomic > Analytical & Environment > bioactivities > process > breeding & cultivation > Biorefinery
- **First ha scale demo projects** for some technical centers / University groups
- Low Focus on integration:
  - with other forms of mariculture (e.g. fish, mussels, oysters, etc.) and passive fisheries
- **Future focus** on bioactives, by-product valorization, biorefinery processes, standardization, **market demand**, development of biomaterials etc

# European Atlantic basin: business status



Small number of large companies process into (semi) products (mature market of Hydrocolloids)

Browns (2 plants - wild harvest, EU)

Reds (3 plants - harvest but mainly cultivation, Asia),

Annual average harvest:

- Iceland: 10 000 T fresh
- Ireland: 25 000 T fresh
- France: 80 000 T fresh
- Spain: 6 000 T fresh

# European Atlantic basin: business status



**Large number of SME's** have been established over the past 30 years;  
Main focus is **FOOD** and **COSMETICS**  
Several global leaders on **seaweed based fertilizer** in this part too  
They grew from **very small companies to SME's** in the last **15 years**

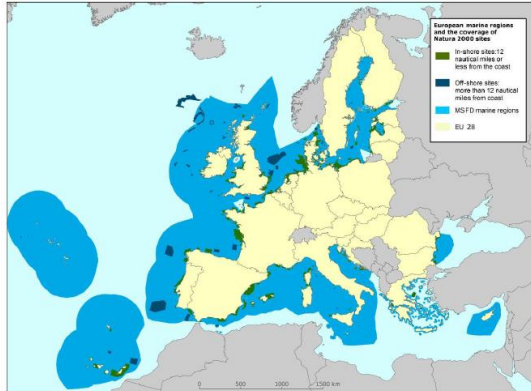
Only **few** companies have **licenses for sea cultivation**: 2 Ireland, 4 France, few in Iceland, others ?

**Land cultivation**: main established company Alga+ , several initiatives in France and Ireland

**Mature companies** at different levels of the seaweed value chain **but still not well coordinated**

# European Atlantic basin: legislative status

## Marine Natura 2000 sites



- 360 330 km<sup>2</sup>
- Near 6 % EU marine area
- Better coverage in-shore (<12 nm), than off-shore
- Still in 'construction'

European Environment Agency



Integrating aquaculture within local communities



- Most of the areas covered by **the Natura 2000 legislation**
- Each country along the Atlantic basin has its **own legislation and regulations** when it comes to seaweeds (e.g. rights to harvest, access licenses for cultivation areas, organic status etc.)
- **The process to apply for large(r) cultivation concessions is very long and extremely complex and professional and social acceptance makes it very challenging in practice**

# European Atlantic Basin: challenges and needs

- **Access to sea** in the European Atlantic Basin for cultivation **is very challenging**:  
Natural geography, too many competitive activities on potential sites, regulations...
- Need for stronger **integration / connection between** the different **actors of the sector**
- Need for strong **collaboration between** countries and **sea basins**
- Need for **uniform legislation** across the **EU countries**
- Need to stimulate the **interest of society & legislators** in seaweed products
- Lack of **big players of whole food process** and retail to address large public  
(Nestlé, Unilever...)

**=> DEFINE A CLEAR EU SEAWEED STRATEGY with consolidation of value chain supported by the European Commission and all EU countries!**



*Development of a European seaweed strategy*

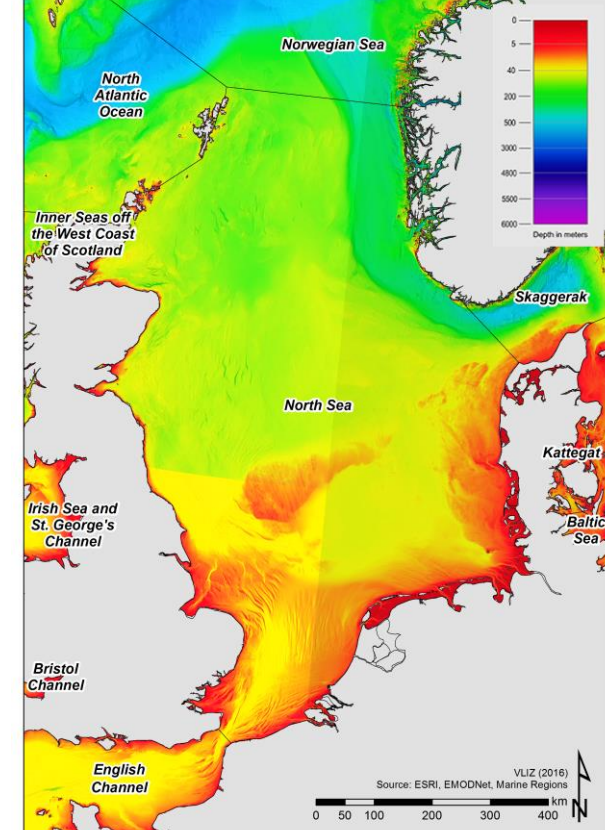
*Status North Sea basin*

# Seaweed activities in and around the North Sea basin

- 570,000 km<sup>2</sup> sea basin surrounded by UK, France, Belgium, Netherlands, Germany, Denmark and Norway
- Relatively shallow sea, rich in nutrients
- Main activities today: fisheries, offshore wind, oil & gas, ship transport
- By 2030: at least 8000 km<sup>2</sup> offshore wind activities
- Although still small, the North Sea basin has an active seaweed industry



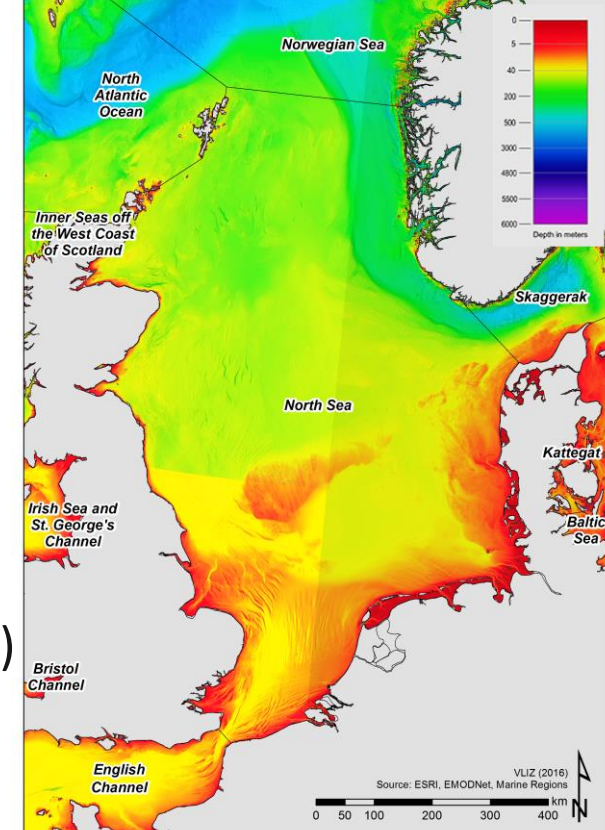
- Active RTDs
- Governments and non-governmental organizations that are following up the development of this emerging industry
- Society is getting interested in seaweeds although slow



# North Sea basin: technological status

- Active RTDs: SAMS, SINTEF, WUR, DTI, ILVO and many more
- Good collaboration between RTDs and industries
- Topics studied: breeding & cultivation\* >> biorefinery > final products
- First ha scale demo projects (e.g. Wier&Wind project in offshore wind park)
- First large offshore test platforms become available
- Focus on integration:
  - with fish farming (IMTA)
  - with offshore wind
  - with other forms of mariculture (e.g. mussels, oysters, etc.) and passive fisheries
- Future focus on upscaling and mechanization of cultivation, cascade biorefinery processes, development of biomaterials, bioactives, etc.

\* majority is still cultivating on ropes (1D); future is probably 2D cultivation substrates

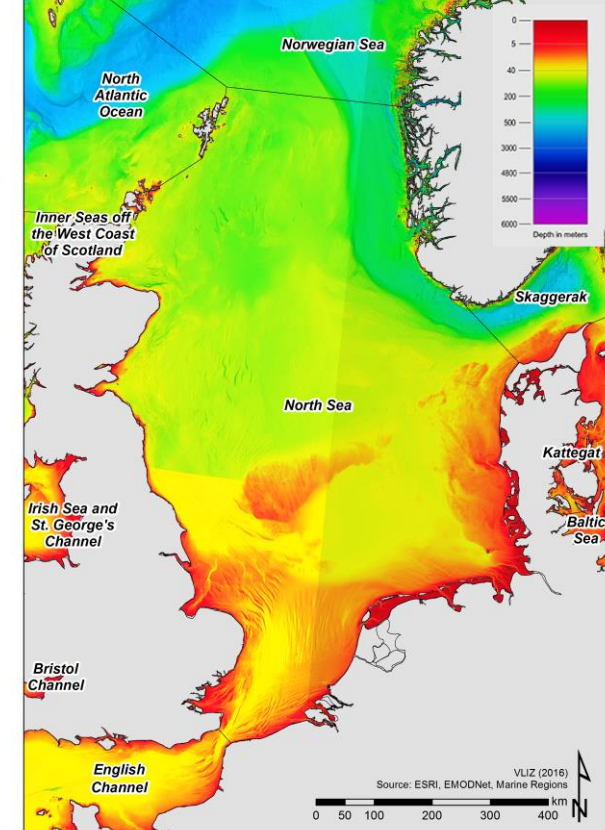


# North Sea basin: business status

- Small number of large companies collect browns (wild harvest, EU) and reds (cultivation, Asia), and process these into (semi)final products (i.e. mature market of hydrocolloids)
- Large number of SME's have been established over the past decade; their main focus is food



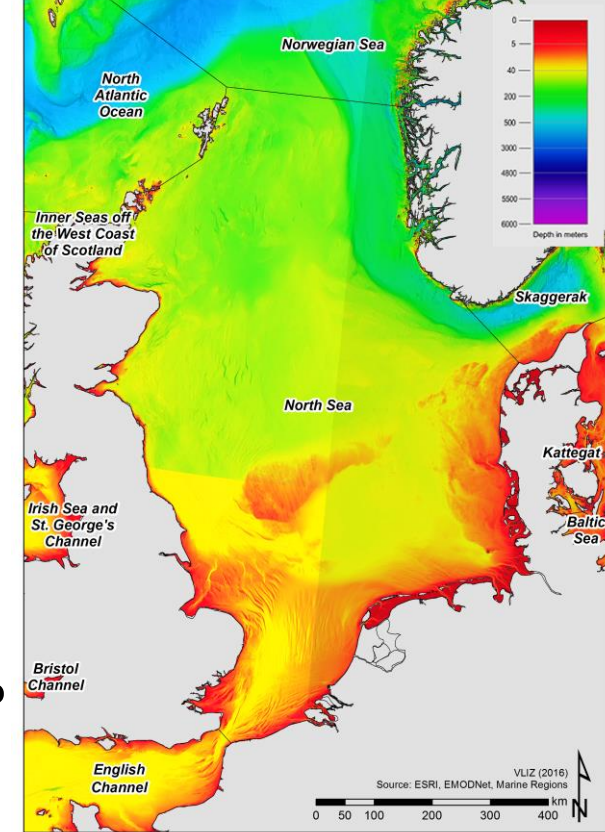
- Although getting more interest in society, seaweed products are still rare in supermarkets, restaurants, etc. (mainly Asian products)
- As seaweeds are not part of our daily diet, Europe should also focus on non-food applications such as feed additives, biomaterials, etc.



European 'production' is appr. 300,000 tons per year, mainly wild harvest

# North Sea basin: legislative status

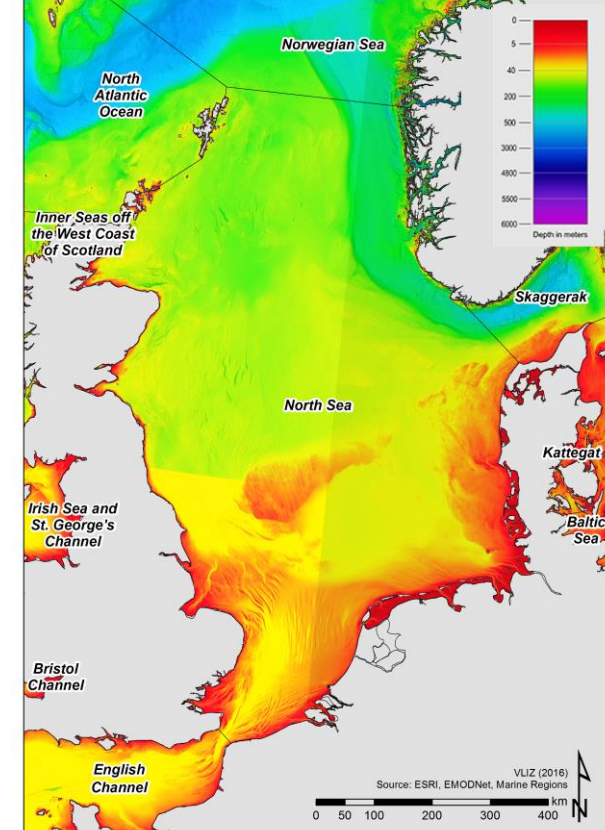
- Each country along the North Sea basin has its own legislation and regulations when it comes to seaweeds (e.g. permits, iodine, heavy metals, etc.)
- The process to apply for large(r) cultivation concessions is very long and extremely complex
- How to deal with cultivation of invasive species such as *Undaria* (Wakame)?



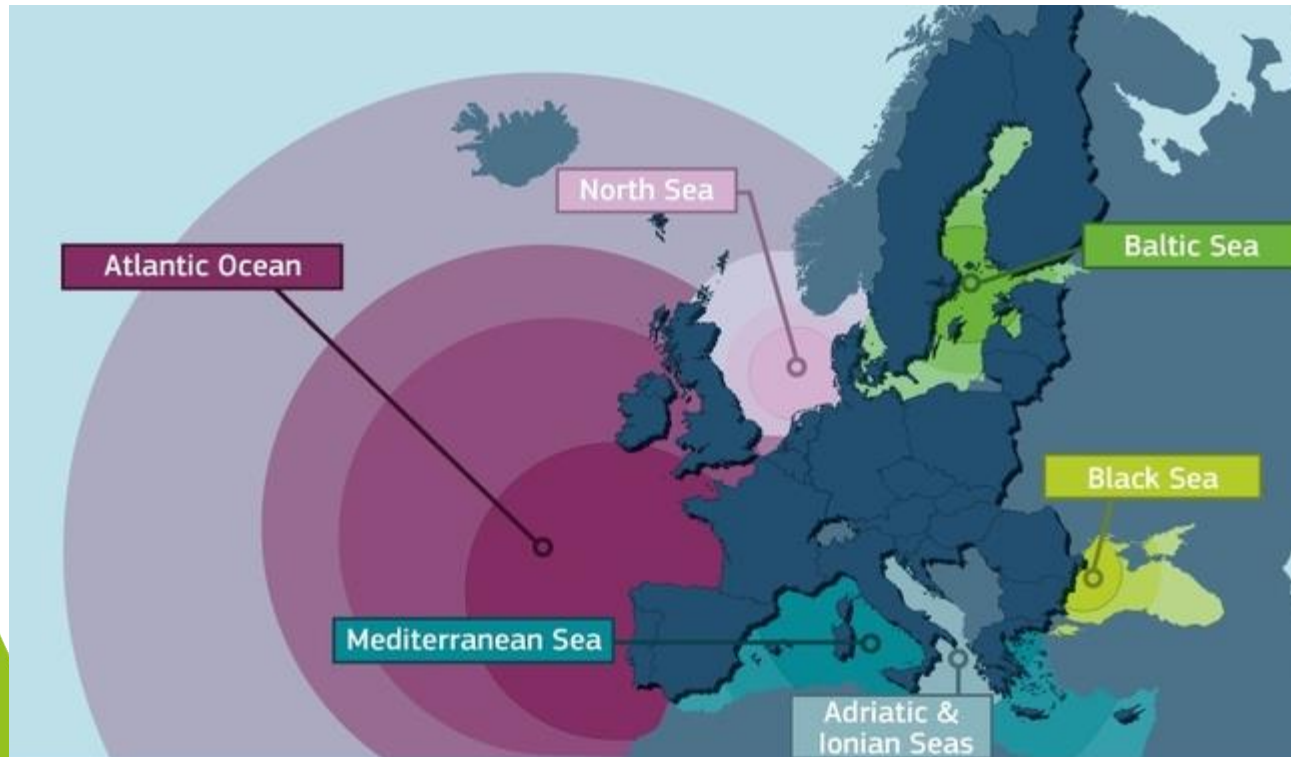
# North Sea basin: challenges and needs

- North Sea basin is among the worst places in the world to cultivate seaweeds
- Integration of seaweed cultivation in offshore wind farms (i.e. 8000 km<sup>2</sup> by 2030) is an interesting option but highly challenging
- Need for strong collaboration between countries and sea basins
- Need for uniform legislation across the EU countries
- Need to stimulate the interest of society in seaweed products
- Etc.

**=> Need for an EU seaweed strategy supported by the European Commission and all EU countries!**



# Status on seaweeds in the different sea basins



1. Mediterranean Sea by Sotiris Orfanidis (Greece)
2. Baltic Sea by Tomasz Kulikowski (Poland)
3. North Sea by Bert Groenendaal (Belgium)
4. **Atlantic Ocean by Franck Hennequart (France)**

