

Bioeconomy: Life below water

Lesson 6



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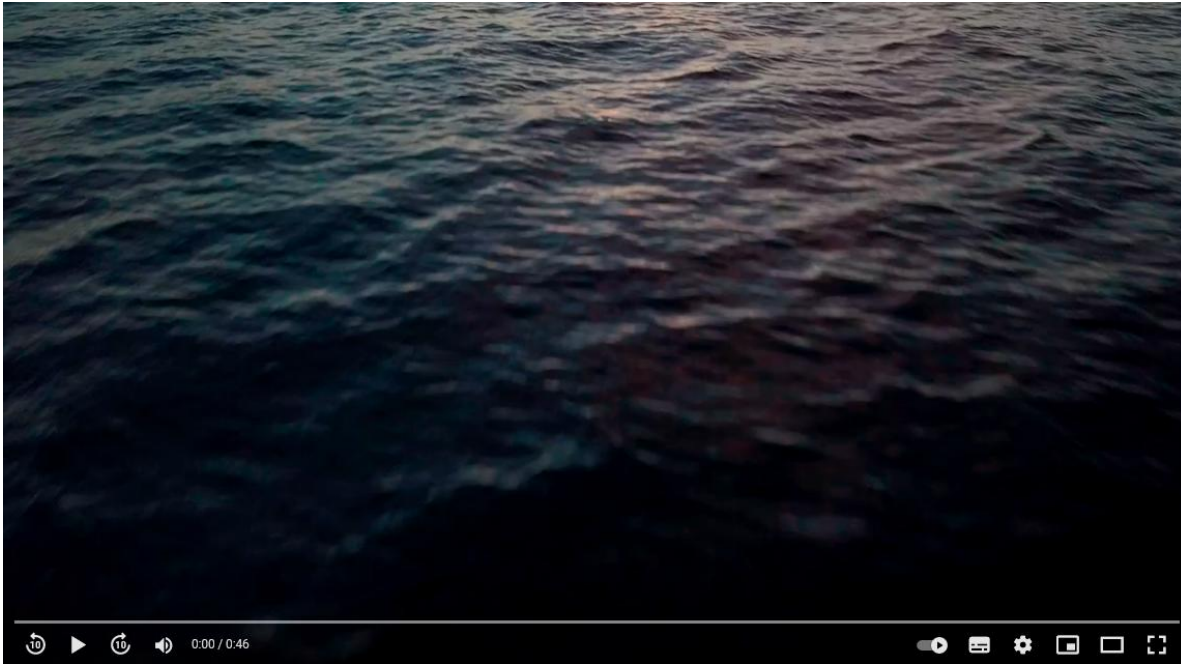
Life below water: the blue bioeconomy



- Who has ever eaten this?
- What is this?
- What are the ingredients?
- What holds the rice together?



Life below water: the blue bioeconomy



- It is possible to use the raw materials from the sea sustainably and to protect the sea for the coming decades.
- This is done in a blue bioeconomy.
- How can we best realise the blue bioeconomy?



Examples of raw materials in fishing

ASSIGNMENT 1:

In pairs, write down all the raw materials from the fisheries & aquaculture sector that you can think of.

You have 2 minutes



Examples of raw materials in fishing

- algae
- crustaceans (including by-products: shrimp tails, crab shells)
- shellfish (including by-products: scallop shells, mussel shells)
- other invertebrates (such as jellyfish), provided they are sustainably produced
- fish
- by-products of fish: bones, skin, intestines, heads, tails, fins, scales, fish oil, blood, fish excrement
- aquatic plants

Source : Bio-based Industries Consortium (2019), Examples of bioeconomy feedstocks.

https://ec.europa.eu/knowledge4policy/glossary/feedstock_en



Examples of raw materials in fishing

ASSIGNMENT 2: Corner work:

- Divide the class into 4 groups.
- Each group starts in one of the 4 corners of the classroom.
- At each corner you will see a YouTube video in which you have to answer a number of questions.
- The assignments are listed in the workbook.

During the corner work, students are given 5 to 10 minutes per corner to complete the assignment.

Once each corner is completed, students move clockwise.



Corner 1: Will we soon be eating seaweed from the North Sea?

- Seaweed is a sustainable product
- The North Sea is ideal for the production of seaweed
- Can be used as a meat substitute
- Can be used as a salt substitute





The Blue Bioeconomy: Seaweed Potential

- Saltwater covers as much as 70 percent of the earth's surface and is full of 'seaweed'
- 'Seaweed' is a plant-like organism that grows on the coast and attaches itself to a rock or other hard surface
- Seaweed does not consume scarce resources
- Unlike other crops, almost all of seaweed is edible.



The Blue Bioeconomy: Seaweed Potential

- Seaweed contains more protein than steak and more iron than spinach.
- They grow in salt water, double in size every day and absorb CO₂.
- In Asia it is eaten a lot. Are you ready for it?



The Blue Bioeconomy: Seaweed as Food

- You can buy seaweed fresh or dried.
- Dried, you can use it as a seasoning that you sprinkle in pieces over a dish.
- You can also rehydrate it in water.
- Fresh or rehydrated seaweed is delicious in a salad or soup.
- You can also eat it as a snack or process it into a smoothie or dessert.

Corner 2: The blue bioeconomy: clothing

- [Bloom](#) - Multi-purpose foam made from algae waste from polluted water. The material is biodegradable and helps reduce excessive algae growth.





Corner 3: Ohoo



- [Ooho !](#) - Sustainable packaging made from a combination of brown seaweed and plants Edible and tasteless packaging

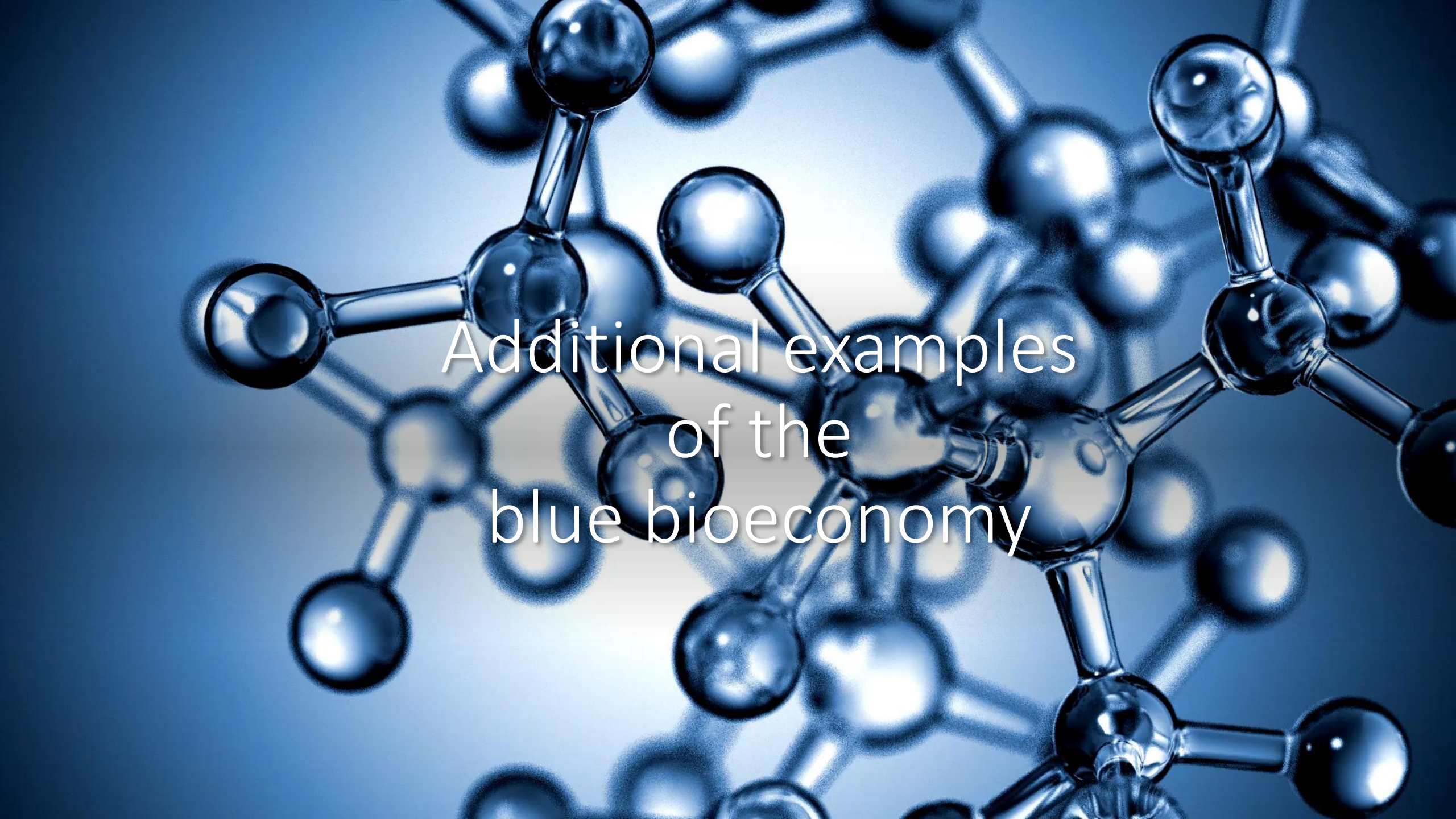
In 2019, marathon runners in London were given edible seaweed bags filled with a sports drink instead of plastic bottles.





Corner 4: Marinatex

- [MarinaTex](#) - A compostable alternative to plastic .
- Made from fish waste and compostable materials
- Composts within 6 weeks

The background of the image is a complex, three-dimensional molecular structure, possibly representing a protein or a complex organic molecule. It is rendered in a monochromatic blue color scheme, with various shades of blue and white highlights that give it a sense of depth and volume. The structure consists of numerous spheres (atoms) connected by rods (bonds), forming a dense, interconnected network. The text "Additional examples of the blue bioeconomy" is overlaid in the center of the image, in a white, sans-serif font. The text is arranged in four lines: "Additional examples", "of the", "blue bioeconomy", and "blue bioeconomy". The overall composition is clean and professional, with a focus on scientific and technological themes.

Additional examples
of the
blue bioeconomy



The Blue Bioeconomy: Cosmetics

Natural collagen - made from high-quality ecological materials, namely from the skin of freshwater and saltwater fish

Natural water-based nail polish made from algae



The Blue Bioeconomy: Food

- Fish oil is naturally rich in healthy omega-3 fatty acids
- Flour can be made from fish. For example, “Sea Chips” are handmade with flour from the skin of salmon. It is rich in nutrients.



The blue bioeconomy : accessories

Leathery salmon



Examples of raw materials in fishing

ASSIGNMENT 3:

- You have researched numerous examples of the blue bioeconomy.
- Now complete the list that you made per duo in ASSIGNMENT 1.

5 minutes!



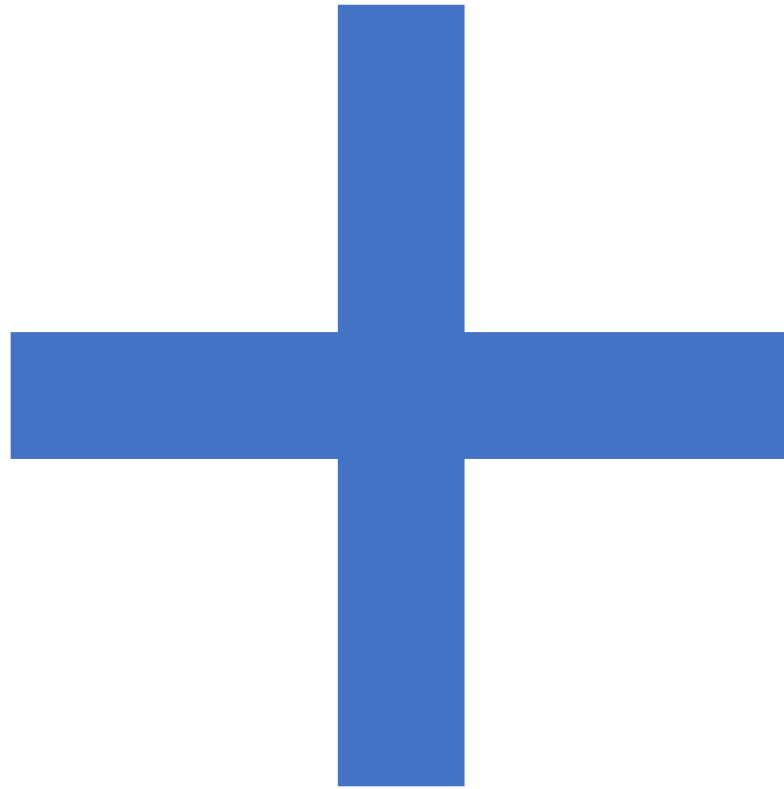
Completion

What raw materials from fishing have you learned about?

Why is aquaculture sustainable?

What did you learn from this lesson?

EXTRA





DIY: Making Seaweed Pesto

Ingredients

- 40g wakame or kombu
- 50g pine nuts
- 1 clove garlic
- 25g basil
- 25g rocket
- 25ml extra virgin olive oil
- 1/2 tablespoon lemon juice

DIY: Making Seaweed Pesto

Preparation

1. Let dried seaweed swell in water for 24 hours or wash fresh seaweed well
2. Cut it into large pieces
3. Place all ingredients in a food processor
4. Store in a jar

Serve on toast or with pasta.
Enjoy!



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