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4th MISSION ARENA
29 April 2024 | Sopot, Poland

Shaping Future Blue Leaders: *Educating Youth for Innovation and a Sustainable Blue Economy*

THEME: Education, Entrepreneurship & Citizen Engagement

#Arena4

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Session Overview

Part 1 25 min	Welcome & Moderation (Piret Stern Dahl) Blue Mission Banos (Frederick Bruce) Cool Blue Project (Frederick Bruce) What is the educational situation in Poland? (Izabela Kotynska-Zielinska) What is the educational situation in the EU? (Dominika Wojcieszek)
Part 2 20 min	Blue Bio Techpreneurs: Blue Bioeconomy Training: Online Course Quiz (Katharina Kurzweil) Case Introduction & Workshop Instructions (Piret Stern Dahl) Case Pitches with reflection time to ask questions about the cases i. Poland • Jakub Piotrowicz, Anna Torunska & Hanna Łądkowska ii. Lithuania • Erika Zavackienė iii. Sweden • Maria Lewander
PART 3 25 min	Workshop Instructions (Piret Stern Dahl) “Mission: Ocean University” Role Play
PART 4 10 min	Sharing in plenary (3 min per table) Group activity: Identify the actions for the region with a focus on cooperation

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PART 1

Context

BlueMissionBANOS: what's it all about?

- **reduce governance fragmentation**,
- **facilitate evidence-based decision making** and
- **foster citizen engagement** across the BANOS area.

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BALTIC & NORTH SEA

Supporting the EU Mission Restore our Ocean & Waters

BlueMissionBANOS inspires, engages and supports stakeholders across the Baltic and North Sea to reach a carbon-neutral & circular blue economy

Education’s role in the Mission Ocean Implementation Plan

The Mission will by 2030 have delivered the following outcomes:

- **All European citizens have the opportunity to engage** in the preservation and restoration of oceans and waters **through participative means, volunteering and citizen science.**
- **All European citizens are empowered to be actors** in the preservation and restoration of oceans and waters through social innovation, awareness raising, education and training.
- Promoted EU-wide annual **ocean literacy campaigns**, in cooperation with the **EU4Ocean Coalition** to strengthen public awareness and overcome the emotional disconnect with the ocean and waters[100].
- Launched **regular citizen science campaigns** as a part of novel participatory research initiatives to increase the reach, quality and impact of scientific initiatives and boost the environmental awareness of the participants.

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CoolBlueFuture

REGENERATIVE OCEAN FARMING IN THE BALTIC SEA REGION - REGIONAL FLAGSHIPS PROJECTS SUPPORTING SUSTAINABLE BLUE ECONOMY IN EU SEA BASINS

COOL BLUE BALTIC: Community Ocean Farms and Local Business Clusters in the Baltic Sea

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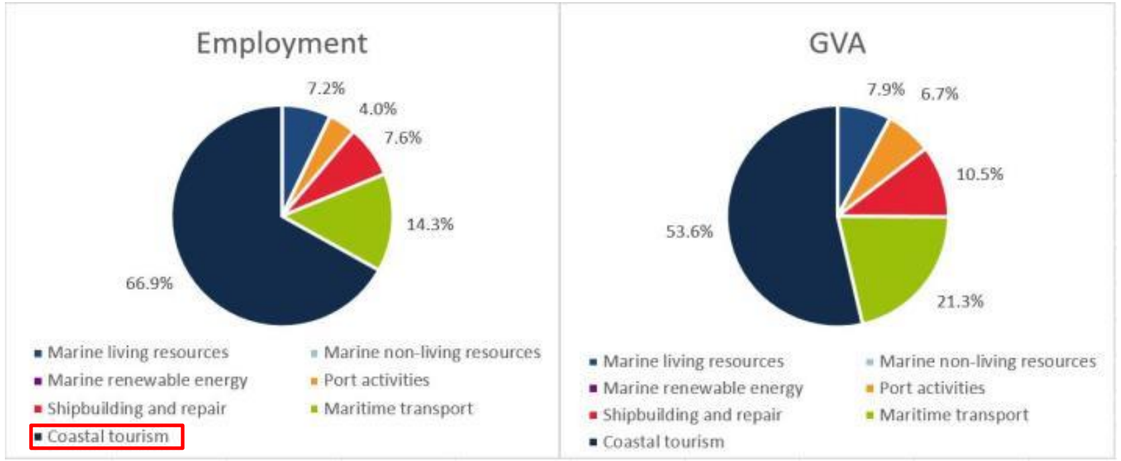
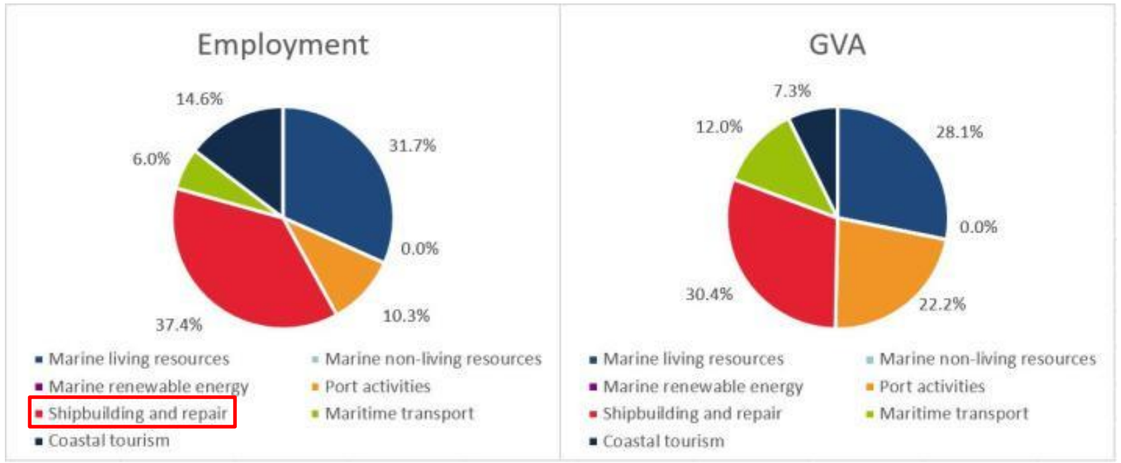
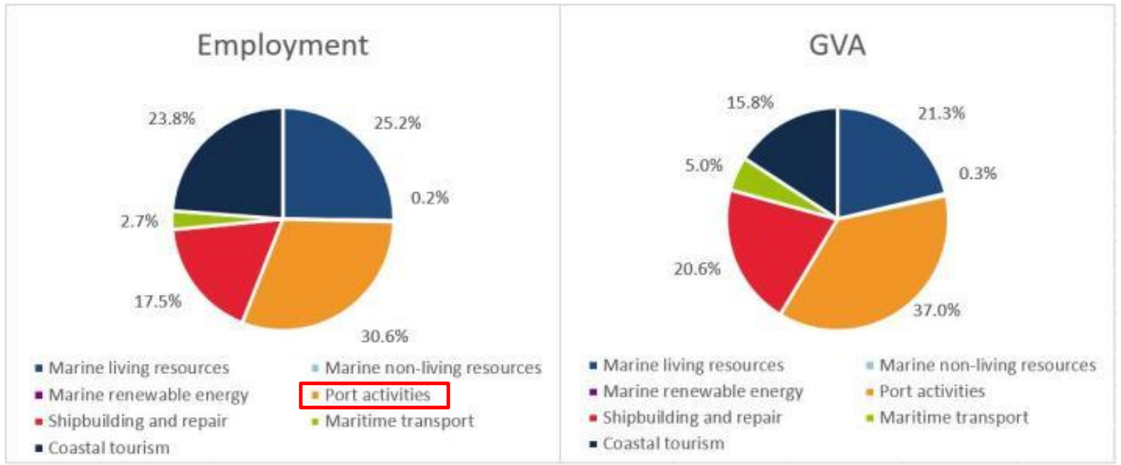
Funded by the European Union under Grant Agreement ID 101124475. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.

- The COOL BLUE BALTIC project is a EMFAF flagship project under Grant Agreement ID 101124475 (EMFAF-2023-PIA-FLAGSHIP).
- The overall objective is to **reorient fishers** from extraction to ocean regeneration activities.
- With 11 partners from each Baltic Member State, the project will assess technical, economic, environmental and social requirements **to establish regenerative aquaculture in the Baltic Sea.**







Which country is which?

Source: EU Blue Economy Observatory 2020

BLUE EDUCATION IN POLAND

Izabela Kotynska-Zielinska, Today We Have

kotynska-zielinska@todaywehave.com

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We have an invasion of fools in Poland. They say that a cow poops, poop produces gases, and these gases pollute the world and a huge ozone hole is forming. We cannot allow them to waste with their ideas what the state has created over the decades.
Source: https://noizz.pl/

Przemysław Czarnek
Minister of Education and Science
(2020–2023)

2021
A beautiful winter, as the climate warming advocates predicted.
And we went sledding.
Source: https://OKO.press

Tomasz Rzymkowski
Deputy Minister of Education and Science
(2021-2022)

2024
We hear that supposedly students will not learn about CO2, but only that the world is burning, that our planet is a desert (...). These are things that are permeated with ideological leftism.
Source: https://o2.pl

Przemysław Czarnek
Minister of Education and Science
(2020–2023)

2022
Let's throw the climate nonsense in the bin.
Source: https://www.rp.pl/

Barbara Nowak - Małopolska
Education Superintendent
(2016-2023)

2021
We do not agree with any ideology of environmentalism that consists in humanizing plants and animals and animalizing humans.
Source: https://edukacja.rp.pl/

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Climate education in Polish schools

In 2020, there was controversy over educational materials prepared by the Ministry of National Education.

One e-textbook suggested that global warming could bring benefits, such as milder winters or a longer growing season, while omitting the potential negative effects of climate change.

„Lex Czarnek”

Source: https://naukaoklimacie.pl/
https://www.facebook.com/mskwarszawa/photos/pcb
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Secondary school (high school/technical school) Curriculum

Subject	Number of hours (per year)	Topics / Curriculum Content
Geography (basic level)	30–32 hours	• Maritime economy and its importance for Poland • Environmental protection and sustainable development • Water management, use of natural resources
Biology	approx. 30 hours	• Human impact on aquatic environments • Aquatic organisms, climate change
Chemistry/Physics (advanced level)	depends on the class profile 30	• Water purification • Bioenergetics • Biomimetics
Entrepreneurship / Safety Education (EDB)	approx. 30 hours	• Sustainable development • Innovative economy • Socially responsible enterprises

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Primary school (grades 4-8)

In lessons of **nature, biology, geography, education for safety, technology** topics:

energy, natural resources, recycling, responsible consumption, matter cycles, aquatic ecosystems, environmental protection, water management, seas and oceans, natural resources, the natural environment of Poland and the world.

Although there are no separate lessons titled **"Blue Economy"**, about **10-20%** of the content in **nature/geography/biology** can be subsumed under the Blue Economy.

This gives:
- In primary school: about 20-30 hours per year (in various subjects)
- In high school: about 15-25 hours per year

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What is the status of education in Poland – from the perspective of climate education and the blue economy now?

Strengths:
Teachers and students are getting involved in educational projects related to climate and blue economy (e.g. EU programs, Erasmus+, scientific competitions, conferences).

Scientific institutes e.g. **Institute of Oceanology of the Polish Academy of Sciences** in Sopot, **Gdynia Aquarium**, **Today We Have**, NGO's (**MARE, MSC**) which create interesting materials and workshops for young people.

Challenges:
The education system is balanced, conservative and fragrantly rationalized, with a curriculum that does not keep up with the challenges of the 21st century.

Climate and marine education are not essential elements of the core curriculum.

Schools often do not have access to implement such programs on a larger device.

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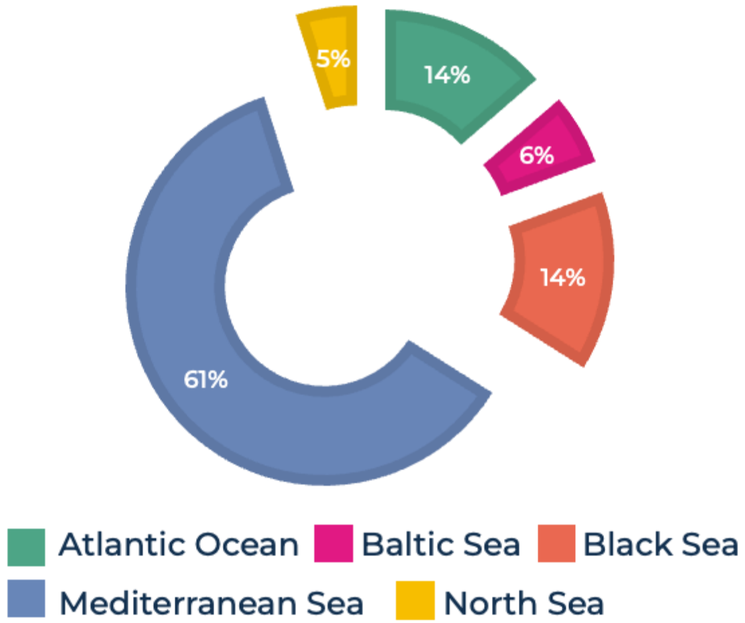
The Network of European Blue Schools

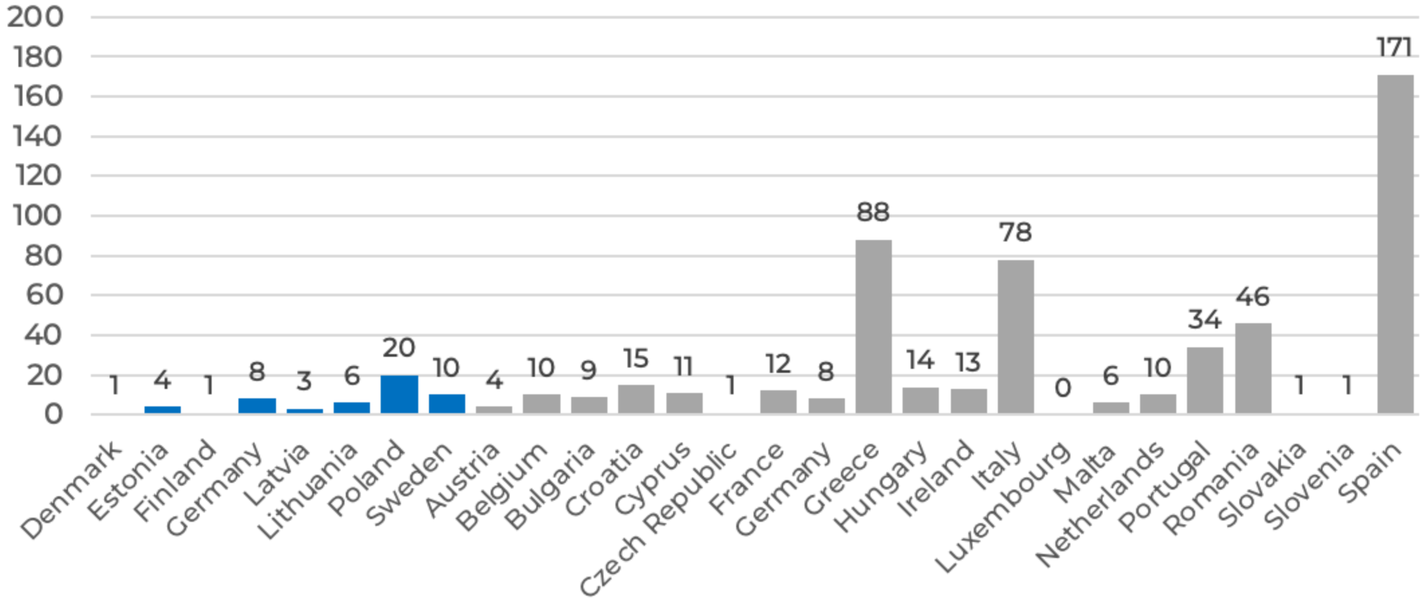
Goals (one of the) - to set up long-term collaborations to help schools connect to programs and facilitators offering marine education.



Inspiring Practices

VONK, Den Helder, the Netherlands: Ship of the Future, Fishery Innovation Platform, Offshore Experience 2024

Stromstad Gymnasium, Sweden: Life at Sea - Strömstad municipality, Tjärnö Marine Laboratory, Gothenburg Marine Biology Laboratory, Innovatum Science Center and Innovatum Science Park.



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PART 2

Blue Bio Techpreneurs

Blue Bioeconomy Training: Online Course Quiz & Workshop Instructions

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Blue Bio Techpreneurs

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Blue Bioeconomy Career & Entrepreneurship Online Courses

Course.1

Introduction to Blue Bioeconomy Entrepreneurship

Get ready to:

- Discover what the Blue Bioeconomy is all about
- Learn how sustainable businesses are built from ocean resources
- Develop creative ideas and an entrepreneurial mindset
- Connect with experts, innovators, and like-minded learners

Start Learning Today!

1/5

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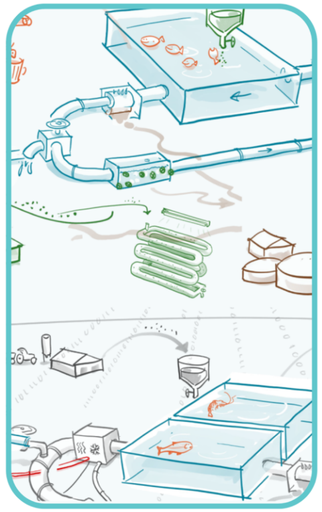
Beyond the Shore: Innovating the Blue Bioeconomy on Land

Course 2.

Get ready to:

- Understand the role of **land-based aquaculture** in the Blue Bioeconomy
- Explore **algae-based products, biotechnology, and novel marine innovations**
- Apply **business models** and **assess sustainable market opportunities**
- Learn how **circular economy** strategies transform blue businesses
- Gain **practical insights and connect with leading experts**



Start Learning Today!

2/5

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Blue Bio Techpreneurs

TRAINING & LEARNING TOOLS

Future Learn

Katharina Kurzweil SUBMARINER Network

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Let’s experience the course now

NEW

Introduction to Blue Bioeconomy Entrepreneurship

Have you ever wondered how marine resources can drive innovation, create businesses, and solve global challenges?

Join now

445 enrolled on this course

Scan this QR code

OR

go to www.menti.com
and use code:
2899 4812

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Cases • Overview

POLAND

The state of Polish fisheries and opportunities for diversification in the Blue Economy sector in Poland. Is training available?

LITHUANIA

Hydrogen, offshore wind and shipbuilding: what skills are needed, how is the interest generated for these careers, and what resources are available in LT?

SWEDEN

Good practice examples in Swedish education: *where is the Swedish blue economy headed, and is the Swedish education system ready for it?*

- Listen to the case studies from each country & choose your favourite
- “Mission: Ocean University”

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PART 3

Case Studies


POLAND

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Aquaculture and fisheries – the Polish Case

Blue Economy as the new opportunity for fishermen and fishing ports in Poland addressing declining fisheries.

Modern aquaculture and offshore wind power – the chance for the regional business growth, education, job creation and ecotourism.

Current aquaculture status? Mostly experimental/academic and research inland efforts. Commercial fish species (salmon, carp trout), algae biomass LUKON project.

Legislative issues – CoolBlueFuture platform providing Regenerative Ocean Farming (ROF) guidelines and connections.

Interesting initative – the commercial use of the round goby.

im.umg.edu.pl coolbluefuture.org

Interreg Baltic Sea Region · Co-funded by the European Union · BLUE ECONOMY RoundGoby

Interreg South Baltic · Co-funded by the European Union · AquaGOOD

NESBp · Co-funded by the European Union

AQUAFOOD

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University of Gdańsk

sea·EU

EUROPEAN UNIVERSITY OF THE SEAS

Bachelor's degree

Aquaculture – Business & Technology

Master's degree

Marine Biotechnology

EU Master's degree

Sustainable Blue Economy (SeaBluE)

krewetka.ug.edu.pl

WYDZIAŁ OCEANOGRAFII I GEOGRAFII UNIWERSYTET GDAŃSKI

In mari via tua

Faculty of Oceanography & Geography

Pharmaceutical & medical use
Innovative aquaculture
Recirculating Aquaculture Systems (RAS)
Algae, Shrimps, Fish, VAP
Circular economy

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aqua loop

Interreg Baltic Sea Region — Co-funded by the European Union

BLUE ECONOMY TETRAS

aqua VIP

Interreg Baltic Sea Region — European Regional Development Fund — European Union

Blue Platform

InnoAquaTech

Summer schools
Workshops, Hackathons
Study visits, Career panels
Conferences, Networking
Consulting, Webinars
Virtual tours, MOOCs

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LITHUANIA

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KLAIPEDA SCIENCE AND TECHNOLOGY PARK

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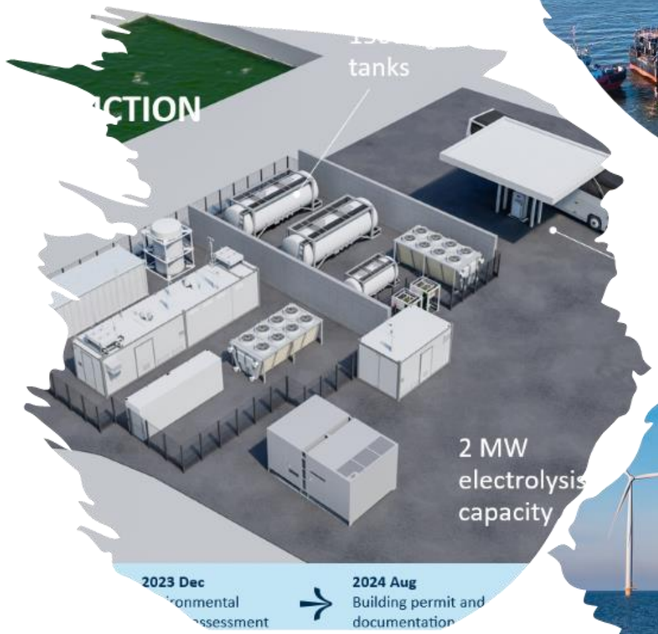
Lithuania

In 2018, Klaipėda City Municipality, Klaipėda State Seaport Authority, Klaipėda Science and Technology Park, Klaipėda University, Klaipėda Free Economic Zone (FEZ) Management Company, Klaipėda Industrialists Association, Klaipėda Chamber of Commerce, Industry and Crafts signed the ambitious Blue Breakthrough or Klaipėda Economic Development Strategy 2030.



- **Green hydrogen production and refueling station**
- **Offshore wind park**
- **Shipbuilding and ship repair**

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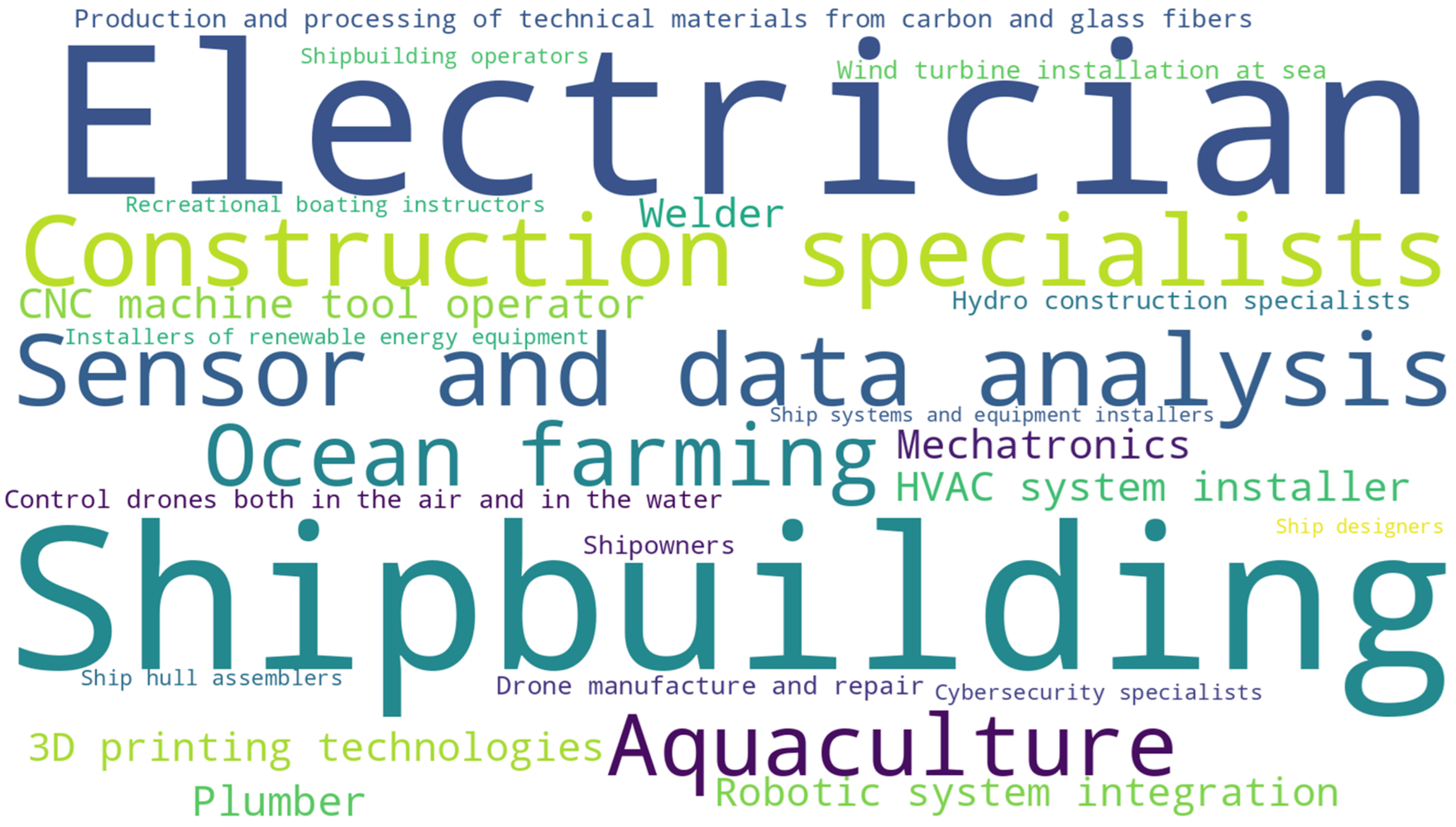
Production and processing of technical materials from carbon and glass fibers
Shipbuilding operators
Wind turbine installation at sea
Electrician
Recreational boating instructors
Welder
Construction specialists
CNC machine tool operator
Hydro construction specialists
Installers of renewable energy equipment
Sensor and data analysis
Ship systems and equipment installers
Ocean farming
Mechatronics
HVAC system installer
Control drones both in the air and in the water
Ship designers
Shipowners
Shipbuilding
Ship hull assemblers
Drone manufacture and repair
Cybersecurity specialists
3D printing technologies
Aquaculture
Plumber
Robotic system integration

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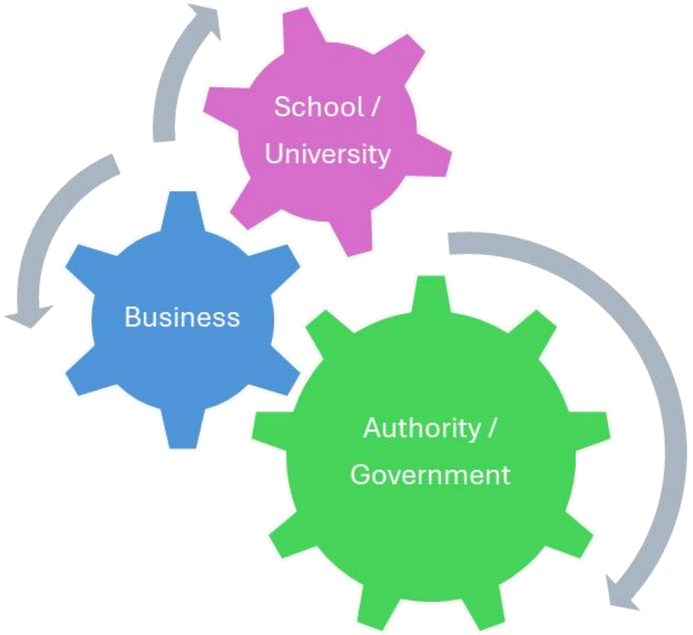
Initiatives and events



KU Ateities fondas | Endowment Fund

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SWEDEN

Good practice examples in Swedish blue education

Maria Lewander & Tina Johansen Lilja,
Swedish Institute for the Marine Environment

maria.lewander@havsmiljoinstitutet.se
tina.johansen@havsmiljoinstitutet.se

Swedish Institute for the Marine Environment

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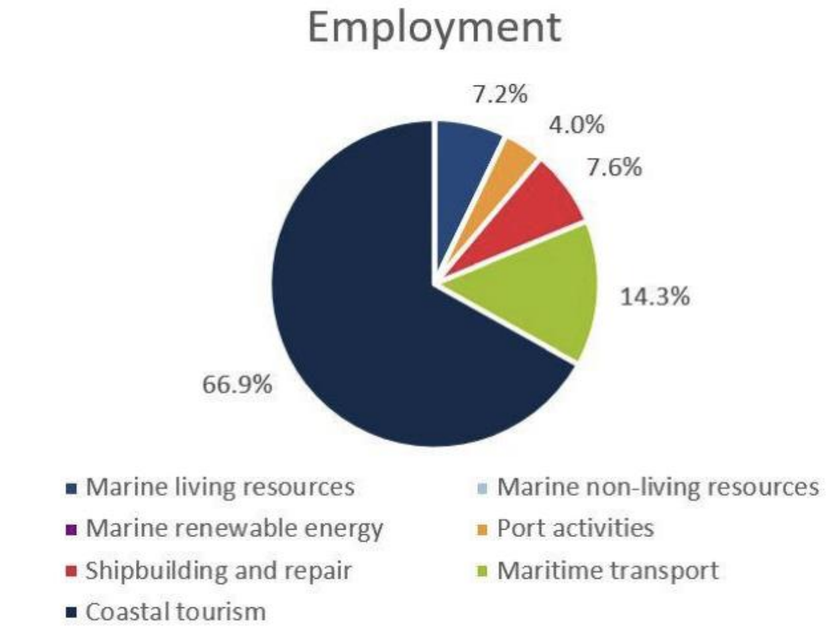
Swedish Blue Economy in Brief

- Swedish Blue Economy employs ≈ 106 300 people, ≈ €5.6 billion in GVA (2021).
- The Blue Economy has a positive, but limited, impact on the Swedish economy, about **1.7%** of the total GVA.

- **Coastal tourism** (67% of Blue Economy jobs)
- **Maritime transport sector** (14% of Blue Economy jobs)
- **Shipbuilding and repair sector** (7.6% of Blue Economy jobs)
- **Marine living resources** (eg. fisheries) (7.2% of Blue Economy jobs)



Source: https://blue-economy-observatory.ec.europa.eu/country-profiles/sweden_en

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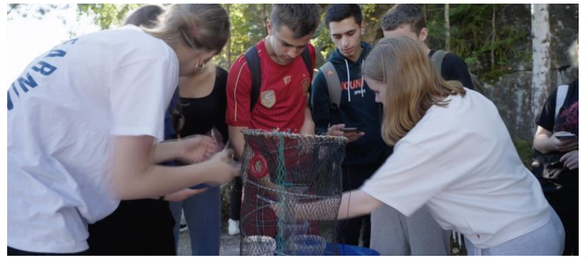
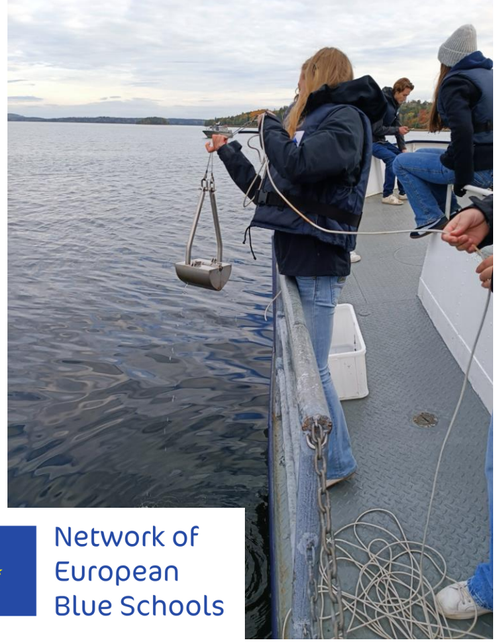
Blue education in Sweden

How to encourage young people's interest in blue jobs
– working in, for, or on the ocean

- **Schools/High Schools** with ocean literacy profile, for example: Hedens skola, Öckerö seglande gymnasieskola, Gullmarsgymnasiet, Strömstad gymnasium & Marina läroverket
- Members of **European Blue Schools Network**
- **6 universities with ocean/maritime profile**.
- **World Maritime University**, Malmö
- Fishing sector – vocational learning/practioners

- Support:
  Swedish Ocean Literacy Network





Swedish Institute for the Marine Environment

Network of European Blue Schools

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Showcasing blue opportunities in Sweden

- Work fairs at universities, marine research stations or science centres
- Aqua Culture: Flytevi – Marine Colony in Gothenburg

Swedish Institute for the Marine Environment

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Mission: Ocean University

1. Which of the case studies presented is your group's **favourite** and **why**?

GROUP EXERCISE: Imagine you are the executive board of a new **"Mission:Ocean" university:**

2. What **faculties / departments** would your university have (name up to 5)?
   e.g. dept of offshore energy, dept of ocean farming, dept of shipping & security
3. How would you **attract** students to your university?
   e.g. social media campaign
4. How would you collaborate with universities and/or industry in **other countries**?
   e.g. set up an exchange program, apprenticeships
5. How would you ensure students get a blue economy **job** after finishing their studies?
   e.g. set up paid industry apprenticeships

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Sharing in plenary

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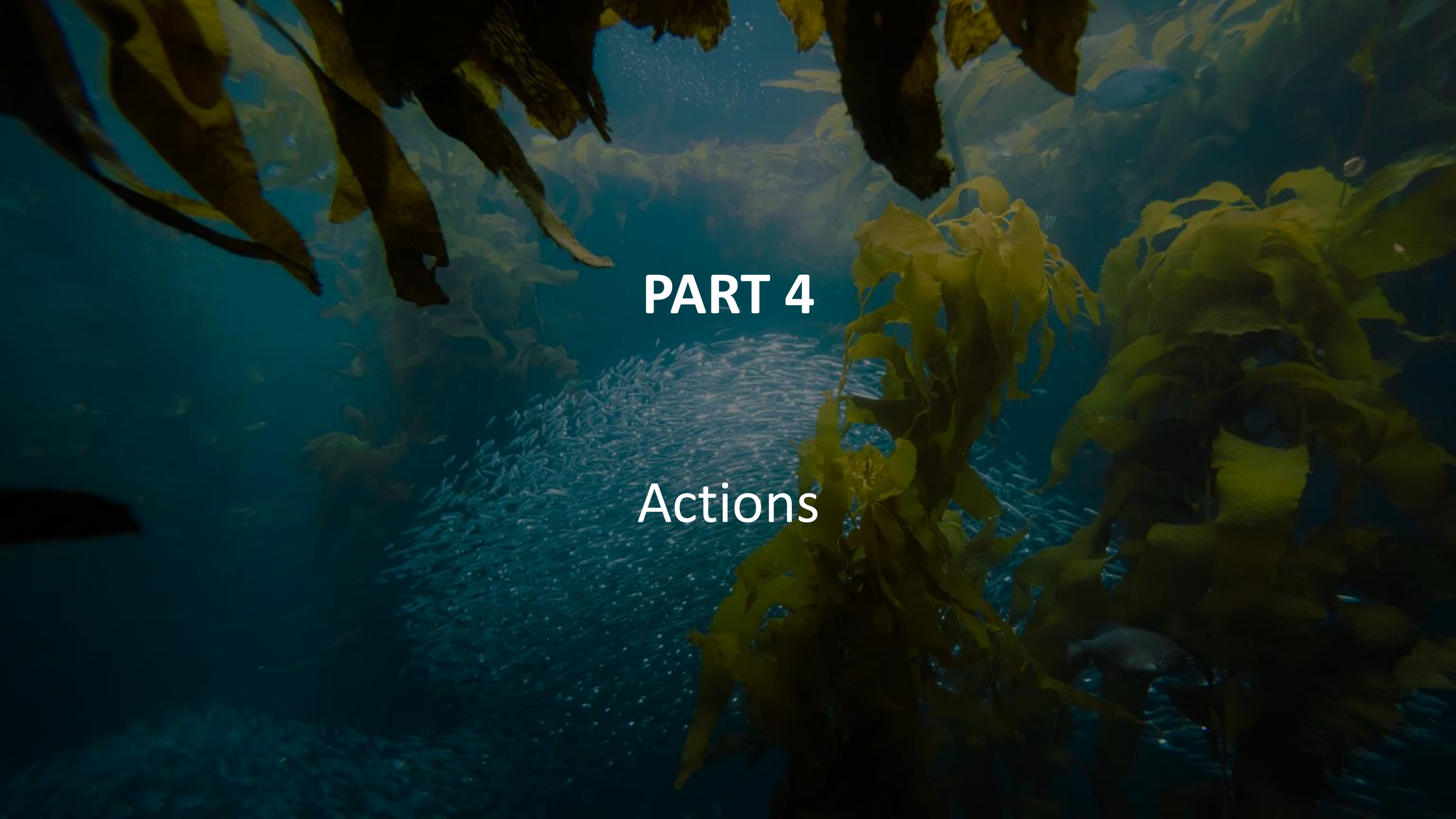

PART 4

Actions

Actions Points before the workshop

1) Promote Ocean Literacy in Schools: Integrate Ocean literacy programs into early education curricula, including field trips to coastal areas & marine research facilities.

2)Blue Economy Hubs: Regional hubs that connect industry and academia, organising events, networking sessions, knowledge-sharing, & vocational training to upskill & reskill, with special attention to younger populations, people in need of employment, and NEETs (not in Education, Employment, or Training).

3) Entrepreneurship & Innovation Training: Blue economy entrepreneurship trainings including innovative practices, business modelling, & startup development.

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Conclusions from each table / booth

How can education in DE/DK/PL/SE **contribute** to Mission: Ocean and the Blue Economy?

Action 1:

Action 2:

Action 3:

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