



Co-funded by  
the European Union

# Black Sea SIERRA – Project 101124670

***ORDU (Turkey): First Training Course, 16th of June 2026***

***From Fish to Bio Innovation: A circular economy Perspective***



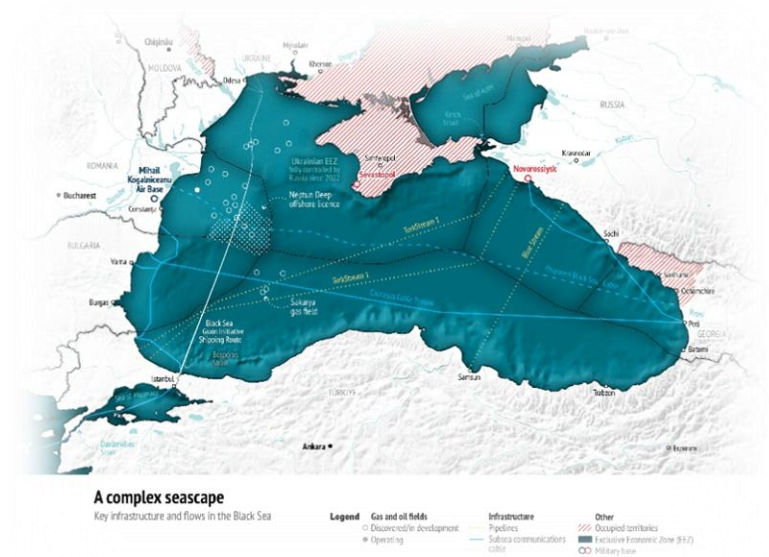
**Mr. Alessandro Pernice**  
**Black Sea SIERRA Project**  
**Research and Technical Manager**  
Head of Unit - European  
Programmes  
ARCES University College (Italy)  
[a.pernice@arces.it](mailto:a.pernice@arces.it)



# Goals

## From Waste to Wealth: Driving the Blue Circular Economy

- This presentation, developed under the **Black Sea SIERRA project**, delivers a comprehensive roadmap for transitioning the Black Sea basin from a traditional linear economy into a sustainable, zero-pollution ecosystem.
- By analyzing a **network of interconnected EU initiatives**—ranging from high-tech 'ghost net' removal to advanced **fish-waste valorization** and **hydrogen energy production**—we will explore how modern bio-innovation turns ecological threats into **commercial and environmental opportunities**.
- Today, we look at how the region is cleaning its waters, cutting emissions, and proving that in a true circular economy, waste is simply a misplaced resource.





# **From Fish to Bio Innovation: A circular Economy Perspective** *(BlackNETs, WISE- Waste, EU Mission: Restore our Ocean and Waters by 2030, GREENFISH, Circular Blue eco Romania, TRESOILPower2X, ALGAWA, BSB-CIRCLECON)*



# 2021 - 2027 Interreg NEXT Black Sea Basin

## BlackNETs

### Goals

Quantify the Threat  
Active Removal  
Harmonized Methodology  
Behavioral Change

### Results

9,500+ kg of Gear Removed  
BlackNETs Guidebook  
The Black Sea Run  
Exhibition Impact

### Activities

High-Tech Mapping  
The GhostBuster Campaign  
Retrieval Operations  
Stakeholder Workshops  
Data Integration

### Partners

- NGO Mare Nostrum (Romania)
- KTU (Türkiye)
- IO-BAS (Bulgaria)
- ISU (Georgia)



Link: <https://shorturl.at/0LEsO>

*To address and mitigate the adverse ecological and socioeconomic impacts of **abandoned fishing gear** by systematically identifying, quantifying, and removing this hazardous form of marine litter, while promoting prevention, awareness, and sustainable fishing practices.*



Co-funded by  
the European Union

# 2021 - 2027 Interreg NEXT Black Sea Basin

**WISE-WASTE (Cooperation for Smart Waste Management Solutions and Pollution Reduction in the Urban, Rural and Coastal areas of the Black Sea Basin)**

**Ongoing!**

## Goals

Digital Modernization  
Pollution Reduction  
Operational Efficiency  
Youth Empowerment

## Activities

Smart Infrastructure Deployment  
WISE-WASTE App  
Smart Tracking System  
Educational "Smart" Vending  
Coastal Protection



## Results

Transnational Cooperation  
Digitized Waste Management  
Community Engagement  
Environmental Impact

## Partners

- Keşan Municipality (Türkiye)
- Municipality of Burgas (Bulgaria)
- Aristotle University of Thessaloniki (Greece)
- International Center for Caucasus Tourism (Georgia)



**Link:** <https://blacksea-cbc.net/interreg-next-bsb-2021-2027/projects/bsb00825>

*To reduce river and marine pollution in the Black Sea Basin by strengthening cross-border cooperation and deploying smart, innovative waste management solutions that improve recycling, support circular economy practices, build institutional capacity, and actively engage communities—especially youth—in urban, rural, and coastal areas.*



Co-funded by  
the European Union

# Horizon Europe

## EU Mission: Restore our Ocean and Waters by 2030

### Goals

Protect & Restore  
Biodiversity  
Zero Pollution  
Sustainable Blue Economy

### Partners

1. European Commission
2. CINEA
3. BOKU University (Austria)
4. Steinbeis Europa Zentrum (Germany)
5. AIR Centre (Portugal)
6. Alfred Wegener Institute (Germany)
7. HCMR (Greece)
8. ERRIN
9. Danube Delta National Institute (Romania)
10. GeoEcoMar (Romania)
11. FORTH (Greece)
12. University of Belgrade (Serbia)

### Activities

Danube & Black Sea  
Atlantic & Arctic  
Mediterranean Sea  
Baltic & North Sea

13. CNR (Italy)
14. IUCN
15. JPI Oceans
16. Ifremer (France)
17. PLOCAN (Spain)
18. SUBMARINER Network (Germany)
19. VLIZ (Belgium)
20. HELCOM
21. Mercator Ocean International
22. Surfrider Foundation Europe
23. UNESCO-IOC
24. University of Zagreb (Croatia)
25. Fraunhofer (Germany)

### Results

Physical Restoration  
Economic Shift  
Community Impact  
Open Access Data

26. INOVA+ (Portugal)
27. IVL Swedish Environmental Research Institute (Sweden)
28. Viitor Plus (Romania)
29. PKS (Serbia)
30. Municipality of Budva (Montenegro)



### Link

<https://shorturl.at/WZsJG>

A central part of the Mission is the Mission Charter, which invites Member States, regions, cities, and stakeholders to pledge concrete actions that support the Mission's objectives, with over 1,000 pledges already contributing to the Mission, and a dedicated Mission Portal which enables progress tracking, knowledge sharing, and access to funding and partnership opportunities.



# Horizon Europe

## EU Mission: Restore our Ocean and Waters by 2030

Ongoing!

maritime-forum.ec.europa.eu/mission-ocean-actions\_en?title=&field\_marf\_moa\_name\_org\_value=&short\_desc=&field\_marf\_moa\_basin\_coverage\_target\_id=...

Home Articles & Events Theme structure Event maker Archives

Home > Mission Ocean Actions

### Mission Ocean Actions

Title of the action Name of organisation Keyword

Basin coverage Type of action proposed Country

Sort by Order

Apply filters Reset

| Name of organisation         | End date of the action | Title of the action                           | List of Partners                                                                                                                                                                                                                                                                                                                                                                                                | Type of action proposed                                                                                                                                                  | Basin coverage                          | Budget allocated for the action | Website link |
|------------------------------|------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|---------------------------------|--------------|
| Agreena                      | 01/09/26               | Research in ocean literacy and climate change |                                                                                                                                                                                                                                                                                                                                                                                                                 | Citizen engagement, citizens-science, youth-led initiatives, communities of practice, ocean and water literacy, outreach, awareness raising and participatory approaches | Danube River basin, including Black Sea | 5500000                         |              |
| nova+ Innovation Services SA | 31/08/29               | SoS2LearnDBS                                  | STEINBEIS 2I GMBH, SDRUZENIE ASOCIACIJA NA DUNAVSKITE OBSTINIDUNAV, SVEUCILISTE U ZAGREBU, FAKULTET STROJARSTVA I BRODOGRADNJE, INSTITUTUL NATIONAL DE CERCETAREDEZVOLTARE PENTRU GEOLOGIE SI GEOECOLOGIE MARINA-GEOECOMAR, UNIVERSITAET FUER BODENKULTUR WIEN, INSTITUTUL NATIONAL DE CERCETAREDEZVOLTARE DELTA DUNARII, UNIVERSITAT DE BARCELONA, PRIVREDNA KOMORA SRBIJE, Internationale Arbeitsgemeinschaft | Citizen engagement, citizens-science, youth-led initiatives, communities of practice, ocean and water literacy, outreach, awareness                                      | Danube River basin, including Black Sea | 12499525                        |              |

Source:

[https://maritime-forum.ec.europa.eu/mission-ocean-actions\\_en?title=&field\\_marf\\_moa\\_name\\_org\\_value=&short\\_desc=&field\\_marf\\_moa\\_basin\\_coverage\\_target\\_id=109&field\\_marf\\_moa\\_type\\_action\\_target\\_id=All&field\\_marf\\_moa\\_country\\_value=BG&sort\\_by=field\\_marf\\_moa\\_start\\_date\\_action\\_value&sort\\_order=DESC](https://maritime-forum.ec.europa.eu/mission-ocean-actions_en?title=&field_marf_moa_name_org_value=&short_desc=&field_marf_moa_basin_coverage_target_id=109&field_marf_moa_type_action_target_id=All&field_marf_moa_country_value=BG&sort_by=field_marf_moa_start_date_action_value&sort_order=DESC)



Co-funded by  
the European Union

# Interreg NEXT MED 2021-2027

## GREENFISH: GReen frontiERS in innovativE sustaiNable FISH-based bioproducts



GREENFISH



Link: <https://shorturl.at/Hf09B>

### Goals

Fish Waste Valorization

Circular Fisheries

Pollution Mitigation

Policy Alignment

### Results

Operational Waste Network

Value-Added Prototypes

Reduction in Marine Litter

Eco-Certification Guidelines

### Activities

Green Hubs Establishment

Pilot Demonstrations

Net-to-Product

Capacity Building

Joint Strategy Development

### Partners

- ARCES — Italy
- The Research Council for the Development of Innovative Agro-environmental Systems (CoRiSSIA) - Italy
- Agricultural University of Athens — Greece
- National Institute of Marine Sciences and Technologies — Tunisia
- Kahramanmaraş Sütçü İmam University — Türkiye
- Leanovator — Algeria
- Alexandria University — Egypt

*To achieve 100% fish utilization by **rethinking fish waste management** and transforming an environmental hazard into a regional bioeconomy opportunity.*



# EMFAF (European Maritime, Fisheries and Aquaculture Fund)



Co-funded by  
the European Union

## TRESOILPower2X, a Success Story in Waste-to-Energy for the Black Sea

Ongoing!

### Goals

Plastic Eradication

Hydrogen Transition

Decarbonization

Circular Energy

### Activities

UHT Gasification

Digital Twin Development

Pilot Plant Operation

Distributed Power Generation

### Results

Clean Energy Production

Zero-Emission Hydrogen

Seal of Excellence

Pollution Mitigation

### Partners

- TRESOIL Biofuels SRL (Romania)
- Powerhouse Energy Group (UK)
- Cumpăna Commune (Romania)
- CMA (Common Maritime Agenda)

*To turn plastic waste into a resource for clean energy production, helping to reduce pollution, support sustainable energy transition, and strengthen environmental and economic resilience in the Black Sea region.*



Link: <https://www.tresoil.com/>

Link: <https://black-sea-maritime-agenda.ec.europa.eu/tresoilpower2x-success-story-waste-energy-black-sea>



# 2021 - 2027 Interreg NEXT Black Sea Basin



Co-funded by  
the European Union

## ALGAWA (Utilization of Macroalgae Biofilter for Wastewater Treatment)

Ongoing!

### Goals

Bioremediation  
Circular Bioeconomy  
Combating Eutrophication  
Technological Scaling

### Activities

Biofilter Design  
Pollutant Analysis  
Biomass Valorization  
Site Selection



### Results

Innovative Wastewater Protocols  
Clean Biomass Production  
Ecosystem Recovery  
Policy Recommendations

### Partners

- International Hellenic University — Greece
- Ondokuz Mayıs University — Türkiye
- Ukrainian Scientific Center of Ecology of the Sea — Ukraine
- National Institute for Marine Research and Development “Grigore Antipa” — Romania

**Link:** <https://keep.eu/projects/32544/Utilization-of-Macroalgae-B-EN/>

*To reduce water pollution in the Black Sea Basin by developing and implementing nature-based biofilter systems using macroalgae (seaweed) and floating wetlands, which are capable of removing pollutants such as nutrients and contaminants from wastewater and marine environments.*



# JOINT OPERATIONAL PROGRAMME BLACK SEA BASIN 2014-2020



Co-funded by  
the European Union

## BSB-CIRCLECON (Knowing Circular Economy in the Black Sea Basin)

### Goals

Promote the Circular Economy (CE) Model

Waste to Resource

Territorial Coordination

Capacity Building

### Activities

Education & Training

Regional Studies

Awareness Campaigns

Networking



Ended!



Link: <https://circleconproject.eu/>

### Results

Trained Experts

Multilingual Platform

Policy Roadmap

EGTC Establishment

### Partners

- Varna Free University "Chernorizets Hrabar" (Bulgaria)
- SEVE (Greece)
- ERFC (Greece)
- Grant Office "ODESA 5T" (Ukraine)
- ICSRPA (Georgia)
- Samsun Metropolitan Municipality (Türkiye)

***To promote the circular economy model and improve sustainable waste management in the Black Sea Basin, by strengthening territorial cooperation among participating countries.***

# THANK YOU

