

Fisheries and Aquaculture in the Danube and the Black Sea region: views for building forward better

Black Sea Strategic Research and Innovation Agenda (SRIA)



CONNECT  BLACK SEA

Connect2BlackSea.org

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CONNECT BLACK SEA

THE UNIQUENESS OF BLACK SEA

4869 km coastline with
421 639 km² total area and
18 major sea ports

10 large rivers flowing to the sea,
with a total river input exceeding
350 km³ year⁻¹

160 million
population of Black Sea
Coasts and catchment

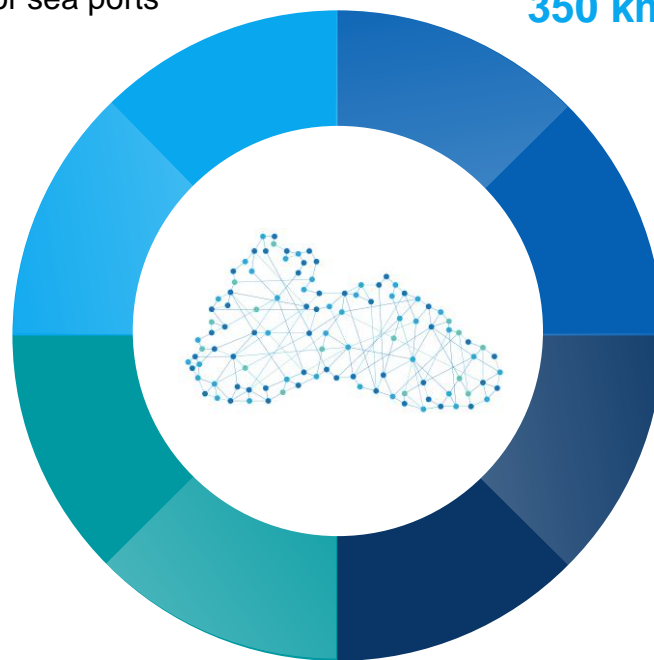
5 ratio of the Black Sea
catchment area to the
sea's area

Deep Black Sea as the
paleoclimate archive of
5 million years

Rich in energy sources
such as wave, currents,
offshore wind, H₂S,
gas hydrates

30 to 8 reduction
in the number of fish species
with enocomical significance

90% of oxygen free,
H₂S-rich volume



A BASIN UNDER THE EFFECT OF MULTIPLE STRESSORS

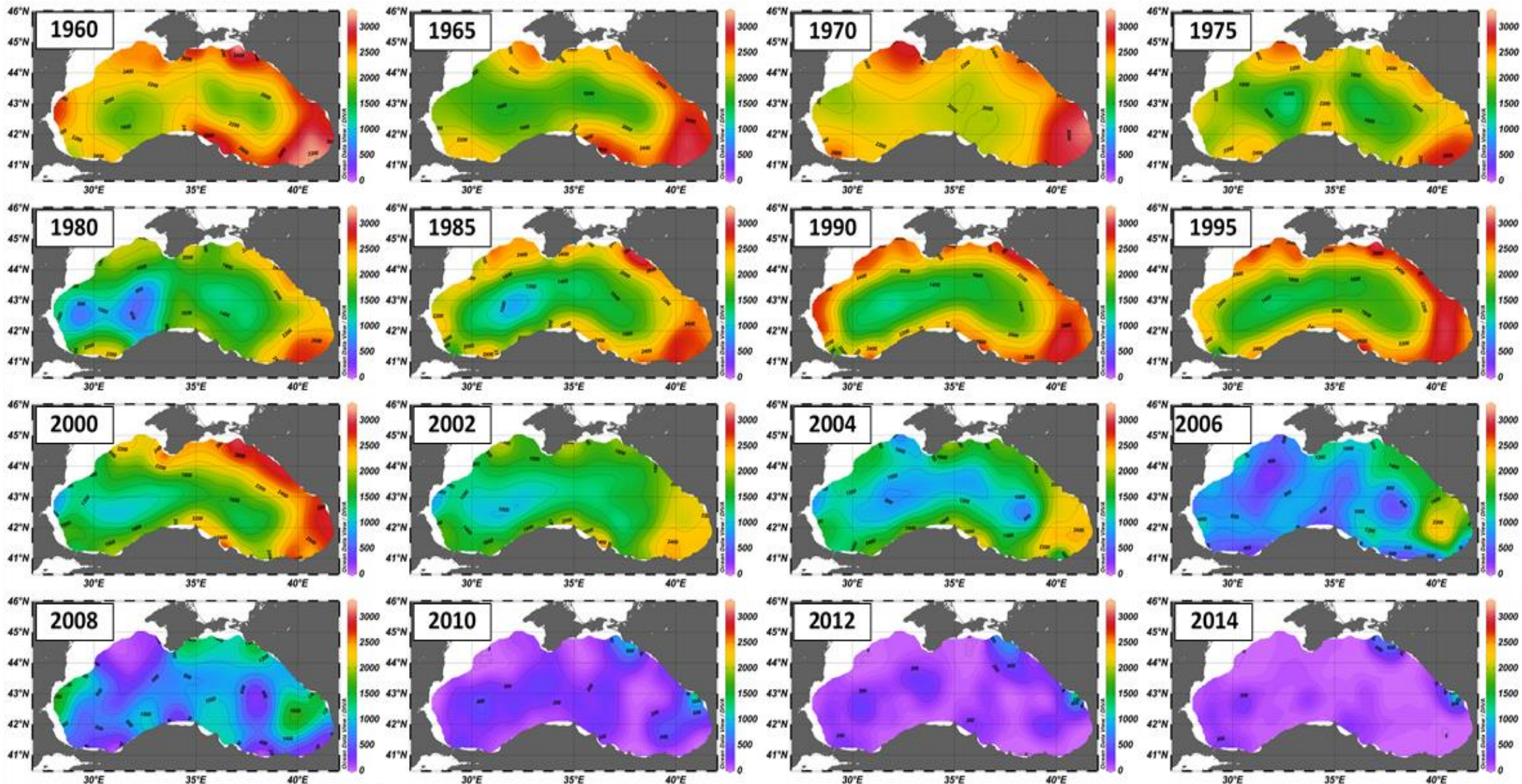


With unique **habitats, abundant resources and rich cultural heritage**, the Black Sea is vital to its coastal communities.

The Black Sea ecosystem is also unique in being susceptible to increasingly negative impacts from **several human-induced stressors, such as eutrophication and hypoxia, overfishing, and introduction of alien species**. Superimposed on these are the effects of **climate change on the ecosystem**.



CLIMATE: EFFECTS ON SPECIFIC DYNAMICS OF THE BLACK SEA



TRANSITION TO A SUSTAINABLE BLUE ECONOMY

If we are to save our sea, sustainably use its resources and build a prosperous economy in our region for the long term, we will need a new approach.

What is Blue Growth?

Blue Growth is the long term strategy to support sustainable growth in the marine and maritime sectors as a whole.

Why is it important?



Job



Value



Sustainability



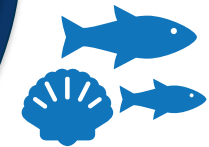
Biotech



Mineral Resources



Renewable Energy



Sustainable Sea Food

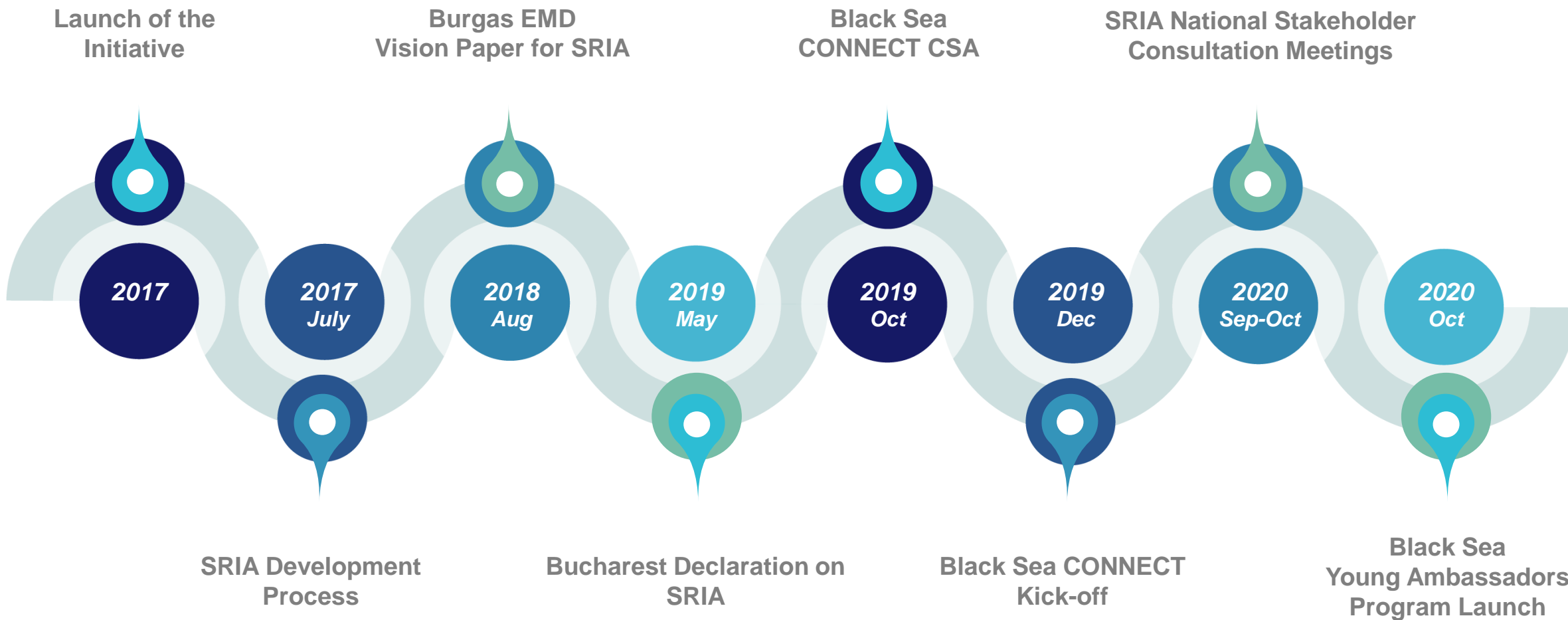


Tourism

Initial focus areas



BLACK SEA JOURNEY SO FAR...



THE STRATEGIC RESEARCH AND INNOVATION AGENDA (SRIA)



WHAT IS THE SRIA?

- A reference framework
- Programmatic tool



KEY OUTPUTS OF SRIA

- National level priorities identified
- Development of national Blue Growth agendas
- Science-based and well-informed decision-making
- Supporting the development of the Common Maritime Agenda



ADDRESSES ALL ECONOMIC ACTIVITIES

- Established sectors such as shipping, shipbuilding, fisheries, traditional sun-sea tourism
- Emerging new sectors such as blue biotechnology, offshore wind energy, ocean energy, coastal and environmental protection



SRIA WILL GUIDE STAKEHOLDERS

- Academia
- Funding agencies
- Industry
- Policymakers
- Society

THE FOUR PILLARS OF THE BLACK SEA SRIA

The Blue Growth Initiative for Research and Innovation in the Black Sea has determined four main pillars based on the Burgas Vision Paper and the Black Sea Strategic Research and Innovation Agenda.

Black Sea

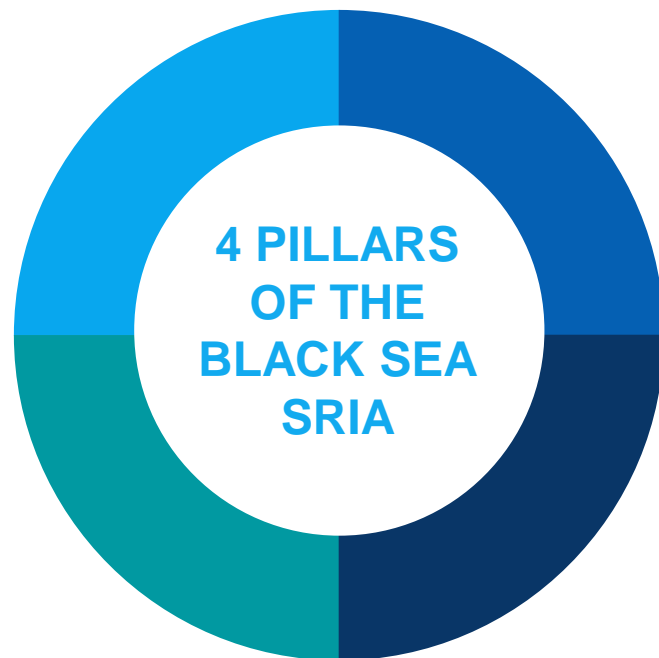
Knowledge Bridge

Addressing fundamental Black Sea research challenges

Empowered Citizens &

Enhanced Blue Workforce

Education and capacity building



Black Sea

Blue Economy

Developing products, solutions, and clusters underpinning Black Sea Blue Growth

Key Infrastructures & Policy Enablers

Building of critical support systems
And innovative infrastructures

Black Sea SRIA and Fisheries and Aquaculture

Pillar 1: Addressing fundamental Black Sea research challenges

- 1.1.1 Address eutrophication, deoxygenation, pollution
- 1.1.2 Enhance food systems research including fisheries
- 1.1.3 Uncover Biodiversity and ecosystem services and functions
- 1.1.4 Investigate socioeconomic drivers and pressures
- 1.1.5 Study Black Sea specific features
- 1.2.1 Quantify natural and antropogenic inputs
- 1.2.2 Support management incl. landward and seaward
- 1.2.3 Establish research on coastal hazards
- 1.2.4 Enhance Black Sea paleoclimate archive
- 1.2.5 Reveal interactions of multistressors
- 1.2.6 Develop end-to-end modelling

Pillar 2: Products, solutions and clusters underpinning Black Sea Blue Growth

- 2.1.1 Foster synergies with all Black Sea countries
- 2.1.2 Support the business uptake of technologies
- 2.1.3 Enhance the dialogue with business
- 2.1.4 Promote science-based policymaking
- 2.2.1 Identify renewable energy sectors
- 2.2.2 Develop sustainable fisheries
- 2.2.3 Foster biotech products
- 2.2.4 Develop innovative tourism services and promote synergies
- 2.2.5 Promote low-emission, carbon-neutral ships and freight operations
- 2.2.6 Promote marine litter management techniques
- 2.2.7 Identify the services for coastal resilience

- 3.1.1 Enhance, build on existing research infrastructures
- 3.1.2 Develop compatible, FAIR, open data
- 3.1.3 Upgrade monitoring, modelling and forecasting capacities
- 3.2.1 Develop common monitoring standards for policy
- 3.2.2 Establish common method & transboundary pilot shemes for MSP
- 3.3.1 Key Ind.4.0 innovations required for the Black Sea monitoring
- 3.3.2 Develop programmes incl. Ind.4.0 for cultural heritage
- 3.4.1 Establishment of Open Transnational Service
- 3.4.2 Support incubators and start ups




Pillar 3: Building of critical support systems and research infrastructures

- 4.1.1 Dedicated MSc and PhD programs
- 4.1.2 Develop vocational education
- 4.1.3 Promote digital literacy
- 4.1.4 Mentor start ups
- 4.1.5 Support students and ECR mobility
- 4.2.1 Promote community participation in science
- 4.2.2 Nurture a Black Sea identity, do outreach
- 4.3.1 Conduct integrated outreach on the anual Science Fairs
- 4.3.2 Train policymakers
- 4.3.3 Communicate Black Sea via Ambassadors

Pillar 4: Education and capacity building

Pillar 1: Addressing fundamental Black Sea research challenges

Main Goal 1 - Developing innovative multi-disciplinary research, building on existing initiatives, including data sharing mechanisms that will generate the knowledge needed to increase ecosystems resilience.

-  1.1.2 Enhance food systems research including **fisheries, recruitment, stock assessment** and sustainability, MPAs, biotech (such as alternative protein sources) (Medium/Long Term)
-  1.1.3 Fill gaps in understanding the evolution of the Black Sea, ecosystem dynamics, biogeographic patterns, biodiversity, and ecosystem functions (including living resources) and **potential impacts of aquaculture.** (*Short Term*)
-  1.1.5 Increase knowledge on ecosystem resilience through an improved understanding of specific Black Sea features such as Rim current dynamics, mesoscale features (such as fronts, eddies, vertical upwelling), suboxic-anoxic interface, deep part (including the sea bottom) in the Black Sea and their roles in nutrient fluxes, productivity and **fisheries** (*Short/Medium Term*)

Pillar 2: Products, solutions and clusters underpinning Black Sea Blue Growth

Main Goal 2 - Creating incentives for maritime innovation in existing and new, emerging blue economy sectors



2.2.2 Develop sustainable **fisheries and high-tech aquaculture** including multi-use platforms (Short/Medium Term)



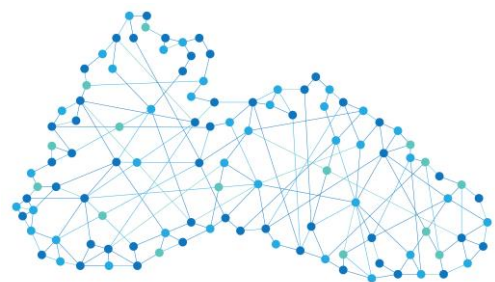
2.2.4 Further develop new and innovative tourism offers and services to promote synergies between coastal tourism and other activities (e.g. pesca-tourism, culture and underwater heritage, **aquaculture,** yachting) (*Short Term*)



HOW TO SUPPORT BLACK SEA SRIA AND ITS IMPLEMENTATION?



Black Sea CONNECT CSA

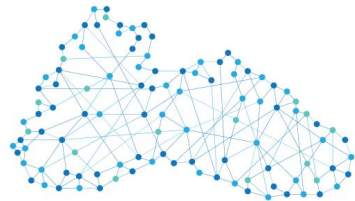


CONNECT  BLACK SEA

- **Call:** H2020-BG-2018-2020 (Blue Growth)
- **Topic:** LC-BG-09-2019
- **Action Type:** *Coordination and Support Action (CSA)*
- **Acronym:** Black Sea CONNECT
- **Title:** “Coordination of Marine and Maritime Research and Innovation in the Black Sea”
10.2019-10.2022
- **Budget:** 1.9 million Euro

THE CORE CONTRIBUTION OF Black Sea CONNECT

THE SPECIFIC OBJECTIVES



CONNECT BLACK SEA

Support the Black Sea Blue Growth Initiative
to consolidate and update the SRIA

1

Develop the SRIA Implementation Plan

2

The establishment of an operational network
for the Black Sea Region

3

Support the design and implementation of
new transnational joint activities

4

Making the Black Sea visible through
empowered Black Sea societies

5

Black Sea CONNECT CSA will scientifically, technically and logistically support the Black Sea Blue Growth Initiative towards the implementation of the SRIA, with a view on boosting the Blue Economy in the region.

Black Sea CONNECT will develop and promote a shared vision for a productive, healthy, resilient, sustainable and better valued Black Sea.

Black Sea SRIA Consultations 2020



National SRIA Consultations in 7 countries



About 600 stakeholders are reached out via virtual and hybrid consultations



Black Sea SRIA actions were ranked and new actions were suggested.



Outputs of Black Sea SRIA Consultations 2020

Pillar 1: Addressing fundamental Black Sea research challenges

1.1.1 Address eutrophication, deoxygenation, pollution	BG, GE, MO, RO, RU, TR, UA	
1.1.2 Enhance food systems research	BG, GE, MO, RO, RU, TR, UA	
1.1.3 Uncover Biodiversity and ecosystem functions	BG, RO, MO, RU, TR	GE, UA
1.1.4 Investigate socioeconomic drivers and pressures	BG, GE, MO, RU, RO, UA	TR
1.1.5 Study Black Sea specific features	BG, RU, RO, UA	GE, MO, TR
1.2.1 Quantify natural and antropogenic inputs	BG, GE, MO, RO, RU, TR, UA	
1.2.2 Support management incl. landward and seaward	BG, GE, MO, RO, RU, TR, UA	
1.2.3 Establish research on coastal hazards	BG, GE, MO, RO, RU	TR, UA
1.2.4 Enhance Black Sea paleoclimate archive	BG, MO, RO, TR, UA	GE, RU
1.2.5 Reveal interactions of multistressors	BG, RO, MO, RU, TR, UA	GE
1.2.6 Develop end-to-end modelling	BG, RO, RU	GE, MO, TR, UA

Pillar 2: Products, solutions and clusters underpinning Black Sea Blue Growth

2.1.1 Foster synergies with all Black Sea countries	BG, GE, MO, RO, UA	TR, RU
2.1.2 Support the business uptake of technologies	BG, RO, UA	GE, MO, RU, TR
2.1.3 Enhance the dialogue with business	BG, GE, MO, RO, UA	TR, RU
2.1.4 Promote science-based policymaking	BG, GE, MO, RO, UA	TR, RU
2.2.1 Identify renewable energy sectors	BG, GE, MO, RO, UA, TR	RU
2.2.2 Develop sustainable fisheries	BG, GE, RO, RU, TR, UA	MO
2.2.3 Foster biotech products	BG, RO, TR	GE, RU, MO, UA
2.2.4 Develop innovative tourism services	BG, GE, MO, RO, RU, TR	UA
2.2.5 Promote low-emission, carbon-neutral ships and freight operations	BG, GE, MO, RO, RU, TR	UA
2.2.6 Promote marine litter management techniques	BG, GE, MO, RO, RU, TR	UA
2.2.7 Identify the services for coastal resilience	BG, RO, RU	GE, MO, TR, UA

3.1.1 Enhance, build on existing research infrastructures	BG, GE, MO, RU, RO, UA	TR
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Pillar 3: Building of critical support systems and research infrastructures

4.1.1 Dedicated MSc and PhD programs	BG, GE, MO, RO, RU, TR, UA	
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4.3.2 Train policymakers	BG, GE, MO, RO, RU, TR, UA	
4.3.3 Communicate Black Sea via Ambassadors	BG, GE, MO, RO, RU, TR, UA	

Pillar 4: Education and capacity building

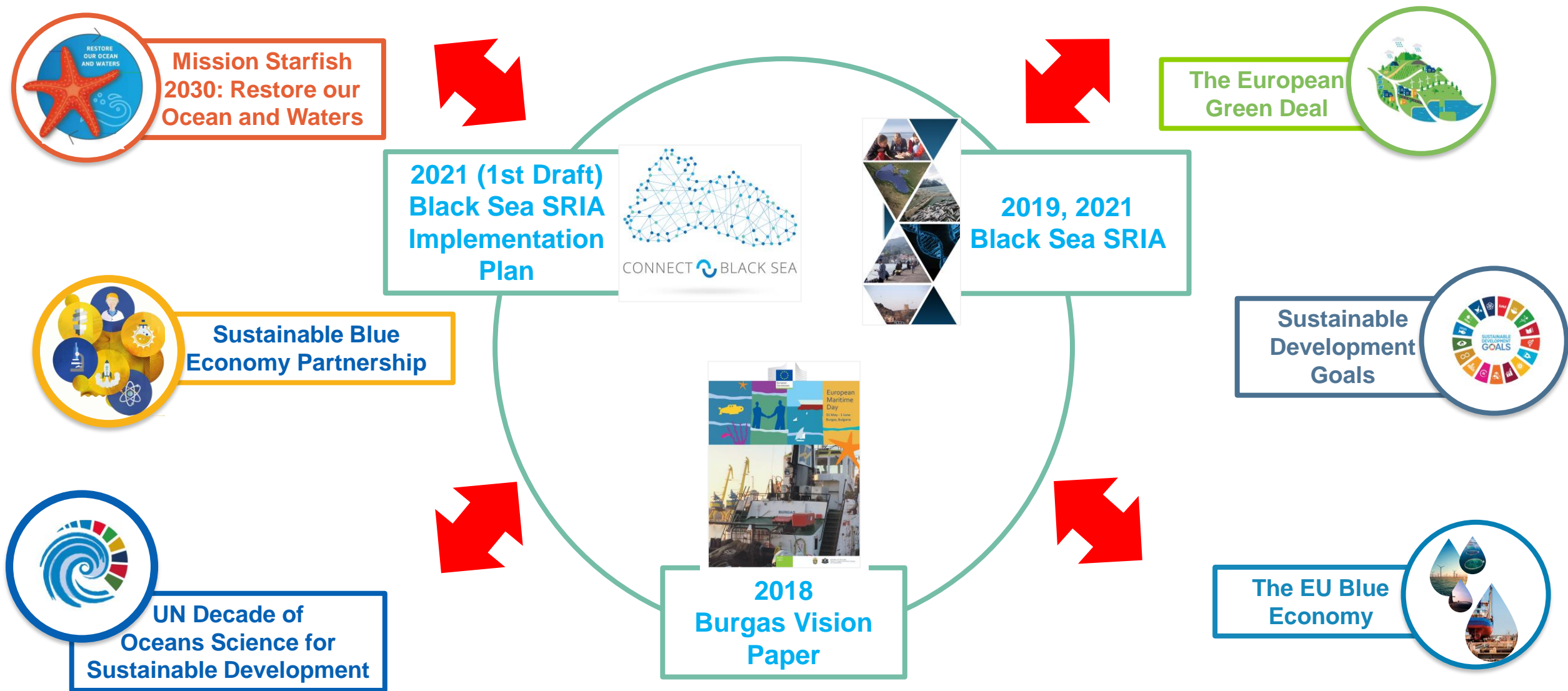
OPERATIONAL NETWORK OF FUNDERS AND KEY PLAYERS

Network of **marine and maritime research funding agencies** and other key players (such as universities, clusters, SMEs, NGOs, industry, innovators and civil society organizations (CSOs)) with the goal to help the creation of the **Implementation Plan** and facilitate and support the dialogue and interaction among research funding agencies, institutes, private companies and relevant ongoing initiatives in the Black Sea area.

The goal: To help the creation of the Implementation Plan and facilitate and support the dialogue and interaction among research funding agencies, institutes, private companies and relevant ongoing initiatives in the Black Sea area.



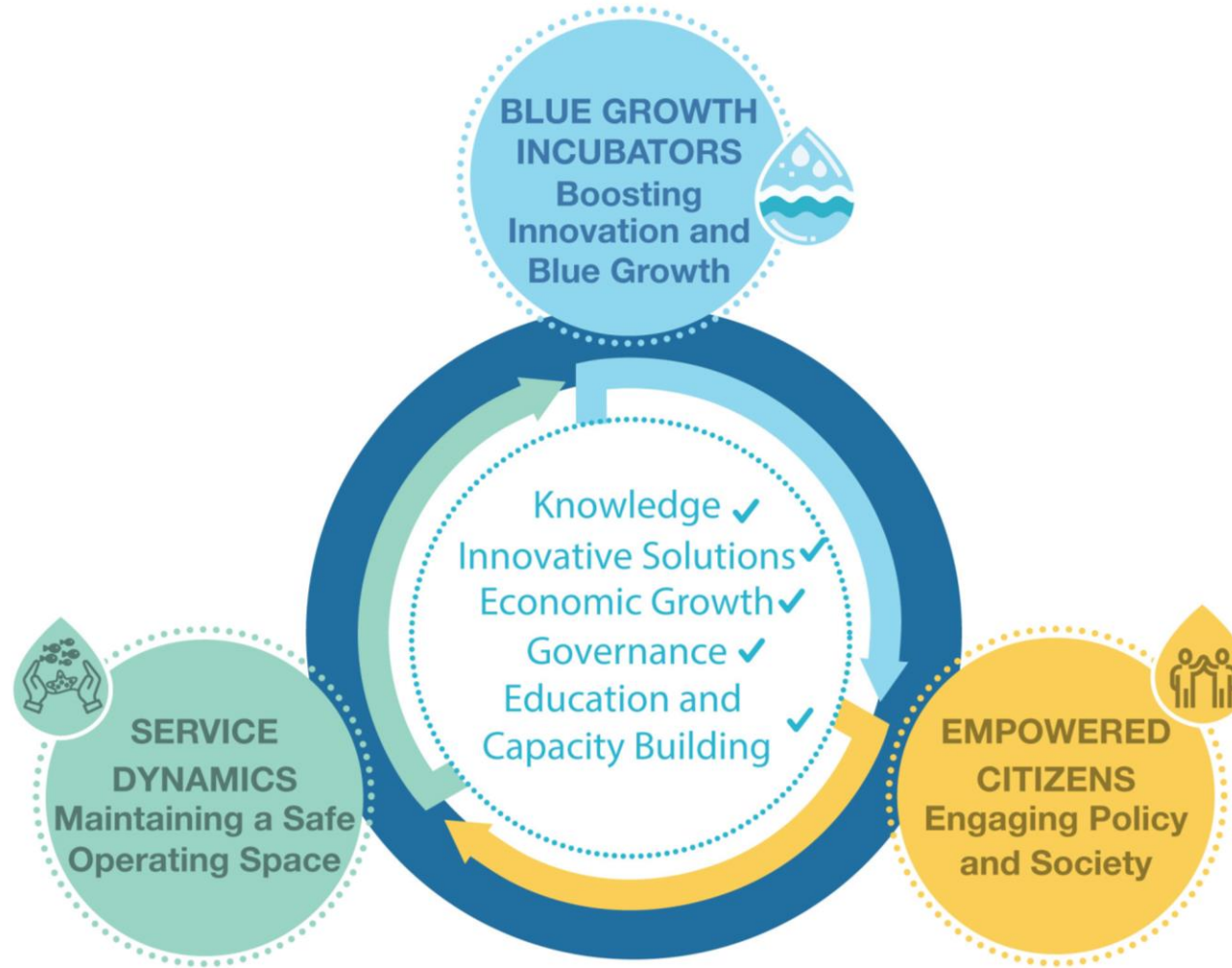
BLACK SEA SRIA Implementation Plan

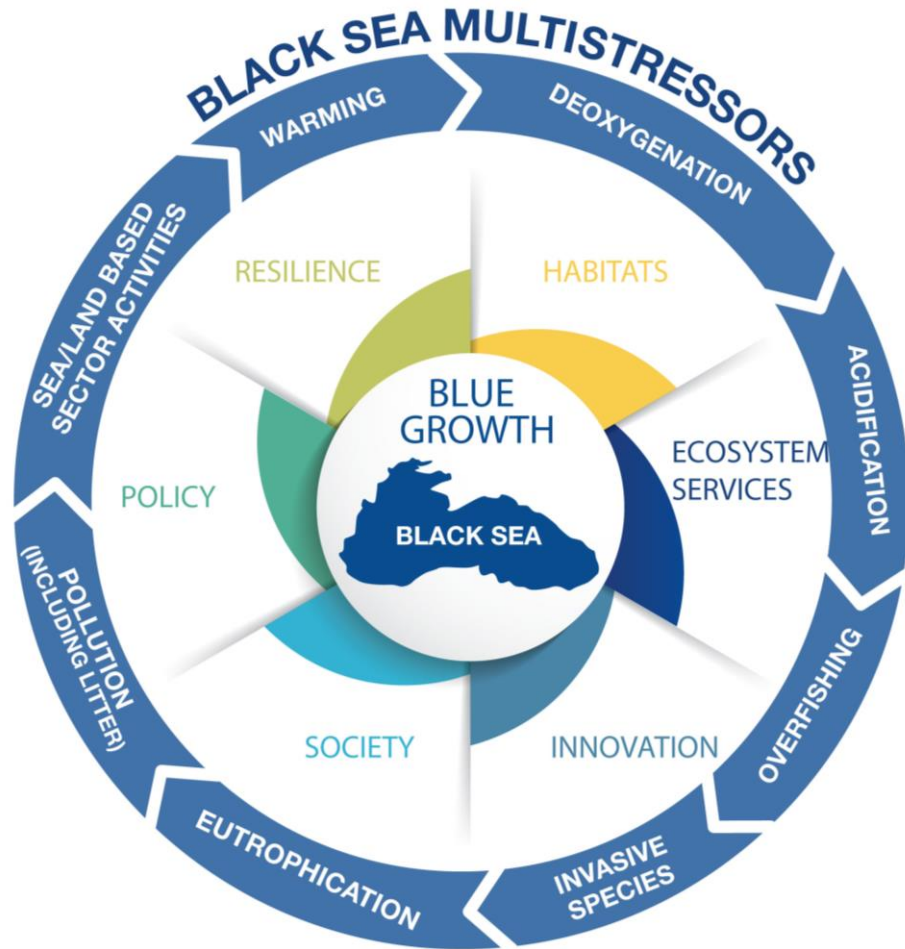




- **Call:** H2020-BG-2018-2020 (Blue Growth)
- **Topic:** BG-11-2020
- **Action Type:** Research and Innovation Action (RIA)
- **Acronym:** BRIDGE-BS
- **Title:** “Advancing Black Sea Research and Innovation to Co-Develop Blue Growth within Resilient Ecosystems”
06.2021-12.2025
- **Budget:** 9 million Euro

BRIDGE-BS





Food provisioning as one of ecosystem services identified within the BRIDGE-BS to harvest the potential of fisheries and aquaculture of the Black Sea



Both basin-scale wide and pilot site scale, Fisheries are identified as one of the 2 main sectors.



Providing support for Industry 4.0 opportunities within the Blue Growth sectors including fisheries.



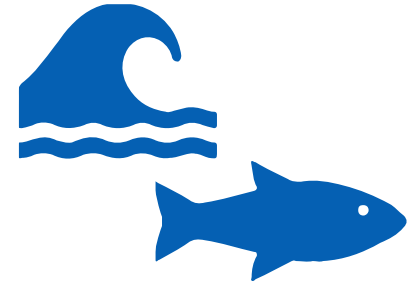
Generate knowledge on the impact of fisheries and aquaculture in relation to the climate change.

JOINT ACTIONS

ECOSYSTEM

COVID-19 IMPACTS ON THE BLACK SEA MARINE ECOSYSTEM

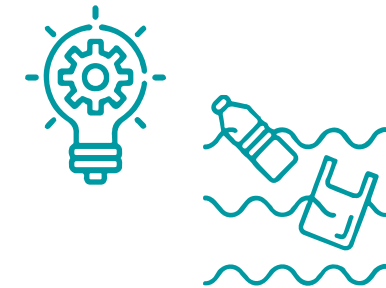
- A committee providing country-level information on the analysis of the positive and/or negative impact of the pandemic on the regional marine ecosystem.



INNOVATION

MARINE PLASTIC

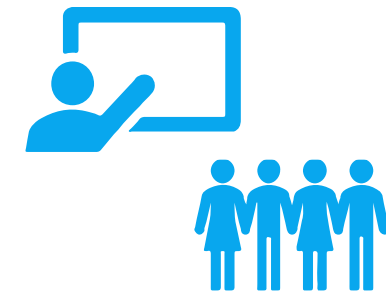
- Development of an Black Sea Plastic Initiative and an implementation plan
- Several joint programs/projects
 - “Pilot Activities on Fighting Micro Plastics and Marine Litter in the Black Sea” project, managed by the BSEC PERMIS
- A committee providing country-level information on the existing marine-plastic related state of the art status



EDUCATION

ACTIVITIES OF THE BLACK SEA YOUNG AMBASSADORS

- Contribution to Black Sea Joint Actions, awareness raising campaigns, linking with different sea-basin young ambassadors and contribution to the V.ECOP day



THANK YOU!



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