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Black Sea Blue Economy Youth and Women Watch

Tuesday, 20 October 2026

Blue Port Index for BSEC Countries

Prof. Dr. Gökçe Çiçek CEYHUN
Project Lead Partner, Bursa Technical University (Türkiye)



UNIVERSITY OF THE AEGEAN
SCHOOL OF BUSINESS
DEPARTMENT OF SHIPPING TRADE AND TRANSPORT

ICBSS

Project Partnership- Blue for Black - Blue Port Index for BSEC Countries

BURSA TECHNICAL UNIVERSITY

BURGAS FREE UNIVERSITY
the new idea in education

TOURISM INSTITUTE

Lead Partner — Türkiye
Prof. Dr. Gökçe Çiçek Ceyhun
Overall project management, BPI analytical development, coordination, quality monitoring and reporting.

Partner 2 — Bulgaria
Prof. Dr. Milen Baltov
Digital BPI platform development (WP3), dissemination coordination (WP5).

Partner 3 — Georgia
Mamia Berdzenishvili
WP1 coordination (needs analysis and data collection), Blue Port Road Map (WP4).

Total Grant

EUR 50,000 | 24-Month Project

Project Overview: BLUEforBLACK

BLUEforBLACK is a collaborative initiative designed to establish the Blue Port Index specifically for the Black Sea Economic Cooperation (BSEC) countries. This project emphasizes enhancing the sustainability, connectivity, and resilience of maritime ports within the region, ultimately contributing to the broader blue economy.



Introduction to the Blue Economy

The Blue Economy represents a transformative approach to managing ocean resources, fostering sustainable economic growth while ensuring environmental integrity.



WHAT IS BLUE PORT INDEX?

The Blue Port Index is an indicator created as a result of the evaluation of ports according to various criteria such as Sustainability, Connectivity and Resilience.The Blue Port Index is an assessment tool used to measure the environmental performance of seaports. This index is designed to demonstrate the effectiveness of ports in terms of environmental management and sustainability of their operations. The Blue Port Index aims to increase the contribution of ports to the blue economy and promote sustainable maritime practices.



With the Blue Port Index study, it is aimed to create a scientific basis for the comparative evaluation of the ports of BSEC countries according to the overall and sub-index values and to determine policy measures. The blue port index will play an important role in shaping the policy measures to be taken by revealing the current state of the performance of the Black Sea ports within the framework of the blue economy.



WHAT IS THE DIFFERENCE OF BLUE PORT INDEX FROM OTHER INDEXES?

In the literature review, no direct research in the form of a "blue port index" was found. There are various indexes known and used around the world. The most well-known of these indexes are:

- The Blue Economy Index is an indicator that measures the sustainable use of marine and ocean resources. It is used to understand the size, health and potential of the "blue economy" in the global economy.
- Environmental Port Index (EPI) is an index system used to measure and evaluate the environmental performance of ports.
- The Smart Port Index is an indicator that measures the smart technologies and digitalization levels of ports.

When all these indexes were examined, it was determined that there was no such index study in Europe and the Black Sea, and in this respect, the Blue Port Index (BPI) constitutes a first in Europe and the Black Sea.

The Blue Port Index — Three Core Dimensions:

The project develops a scientifically grounded and comparable Blue Port Index (BPI) assessing Black Sea port performance across three core dimensions: Connectivity, Sustainability, Resilience. The BPI assesses Black Sea port performance through a structured framework of three principal dimensions, eight sub-categories and 59 operational indicators.



Each dimension is broken down into sub-categories addressing digitalisation, infrastructure, workforce, environmental management, emissions, renewable energy, climate adaptation, disaster preparedness and commercial performance. The framework combines qualitative and quantitative indicators convertible to a common 0–100 scoring scale.

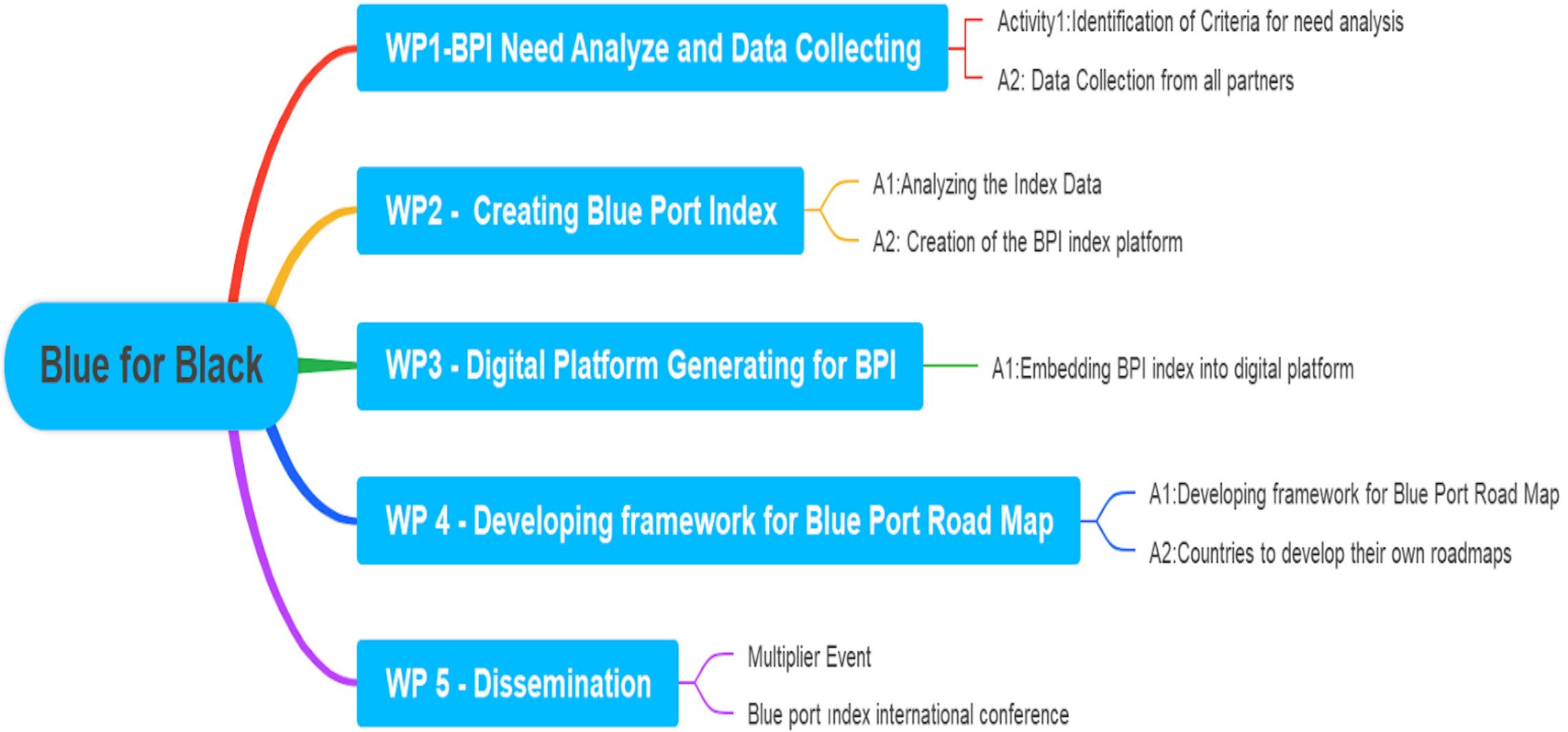
Table 1: List of Blue Port Index Dimensions, Factors, and Indicators

DIMENSIONS	FACTORS	INDICATORS
SUSTAINABILITY	ENVIRONMENTAL MANAGEMENT	"Port reception facilities", the number of existing reception facilities for receiving or collecting waste from ships and the amount of waste
		The amount of change in recycling and recovery practices (if any) in the port over time
		The amount of waste generated by businesses in ports, the change and number of methods used in the disposal of process wastes and products of industries over time
		The amount of invasive aquatic products, (their change and the presence of extinct creatures in the Black Sea over time).
		The amount of "ballast water" in port cities – the ratio of its exchange to the number of visiting ships and the amount of ballast water exchange.
	EMISSION IMPACT	Carbon emission rates of various ship and tanker types in the port
		Railway network of important port cities, their length and the transportation length of these railways to other important cities
		The number of renewable energies used by ports (Kwat), the number of investments for this
		Amount of wastewater discharged into the Black Sea from the port (Ton)
		Annual measurement of port emissions and investments or incentives to reduce emissions

DIMENSIONS	FACTORS	INDICATORS
CONNECTIVITY	DIGITAL CONNECTION	The investment made by port operators in digitalization, the budget they allocate or the proportion of the budget.
		Investments made in search and rescue services in Black Sea port cities, the budget they allocate or their proportion in the budget and availability of these services (SAR plan)
		Number and budget of security personnel and equipment in the port
	PHYSICAL CONNECTION	Warehouse investments in the port, warehouse share in square meters, share in the budget.
		Number of ships coming to the Black Sea, ship type, ship tonnage, ship ages, average waiting times of ships at the port
		The amount of "stowaway passengers" incidents that occurred in Black Sea port cities over time
	SOCIAL LINK	Education level (year, rate) of the personnel working in the port +
		Awareness of port employees about the blue port (Average time spent by people in this region on the internet and in front of television and how often they search for keywords such as clean energy, carbon footprint, climate change, sustainability of these countries on the internet)
		Total number of employees, number of female employees (Gender equality through gender policy and good representation of women in the workforce)
		Employee income amount

DIMENSIONS	FACTORS	INDICATORS
RESILIENCE	RESILIENCE TO CLIMATE CHANGE	Number of interruptions to port operations (limited sensitivity to extreme weather events, with only occasional port closures due to weather conditions in recent years).
		Amount of revenue loss due to outage (Climate change adaptation plan including specific capital investments and operational plans to increase resilience)
	DISASTER PREPAREDNESS	Number of ship accidents occurring in the port
		Amount of technical assistance received by ports from IMO (compliance with international rules and standards on marine pollution, marine safety)
		Number and duration of training, budget for training, regarding the awareness of port personnel regarding marine pollution caused by ships
	COMMERCIAL DURABILITY	The commercial value of the products carried by the ship types visiting the Black Sea, the type of cargo handled in the port, and the amount of cargo. (Change in the share of ports in world maritime trade or the Black Sea)
		Number of port equipment, average operating time, type of energy they use, share of renewable energy type in total energy consumption (Equipment for handling different types of cargo, space that can be expanded in/near the port and various cargo handling facilities that will provide flexibility in changing market demand with value-added services.)
		R&D expenses of the port (may also be its share of GDP)
		Transportation costs (freight) of ships arriving at ports in the Black Sea
		Determining the ways in which the distribution and transportation of products arriving at ports are carried out. (Rail, road, airway).
		Dock data, dimensions
		Service capacity data

Description of Activities



Summary

Kick-off Meeting

Held at Bursa Technical University on 8–9 December 2025, bringing together three partner institutions, senior BSEC representatives and regional stakeholders.

WP1 Completed

Structured needs-analysis framework with 59 operational indicators developed and data collected for Samsun, Burgas and Batumi ports.

Pilot BPI Calculated

Comparative BPI scores produced: Samsun Port 53.37 | Batumi Port 44.34 | Burgas Port 35.94.

Digital Platform Initiated

BFU presented the digital BPI platform concept at the Second Transnational Meeting in Batumi, May 2026.

Kick-off Meeting — Bursa, 8–9 December 2025

The first major milestone of the project, the **Kick-off Meeting** was hosted by Bursa Technical University on 8–9 December 2025. The meeting formally launched the operational phase and brought together representatives of the three partner institutions alongside senior institutional and regional stakeholders. Distinguished participants included **Ambassador Merve Kavakçı**, First Deputy Secretary General of BSEC, **BTU Rector Prof. Dr. Naci Çağlar**, Yıldırım Mayor Oktay Yılmaz, academics and students.



Kick-off Meeting — Bursa, 8–9 December 2025

1 Project Objectives Presented

Work plan, partner responsibilities and collaboration model clarified for all subsequent work packages.

2 Needs-Analysis Framework Agreed

Initial BPI needs-analysis framework reviewed and next steps for data collection confirmed.

3 BPI Vision Established

Blue Port Index positioned as a practical, scientifically grounded tool for sustainable and competitive Black Sea ports.

WP1 — BPI Needs Analysis, Data Collection and Evaluation

WORK PACKAGE 1 | LEAD: TOURISM INSTITUTE

WP1 established the evidence base for the Blue Port Index. The work package covered three connected stages: BPI needs analysis, data collection and data evaluation, with the Tourism Institute coordinating activities and Bursa Technical University contributing analytical processing.

Needs-Analysis Framework

A structured instrument was prepared covering:

- 3 main BPI dimensions
- 8 operational sub-categories
- 59 operational indicators

Indicators addressed digitalisation, physical infrastructure, workforce, gender practices, waste management, emissions, renewable energy, climate disruptions, disaster preparedness, cargo volumes and port capacity.

Pilot Ports Selected

- **Samsun Port** — Türkiye
- **Burgas Port** — Bulgaria
- **Batumi Port** — Georgia

The common structure allowed all partners to collect information using the same analytical framework, creating a basis for comparison and subsequent BPI calculation.

WP1 — Data Collection and Validation

Port-level data were collected from Samsun, Burgas and Batumi ports and consolidated into a common comparative dataset. The data-collection exercise also provided a practical test of the proposed indicator framework, revealing important differences in data availability across the three pilot ports.

Comparability

Cross-port comparability assessed for all 59 indicators to ensure consistent scoring.

Traceability

Each data point traceable to an identifiable port response or authoritative source.

Consistency

Indicators reviewed for internal coherence across the dataset.

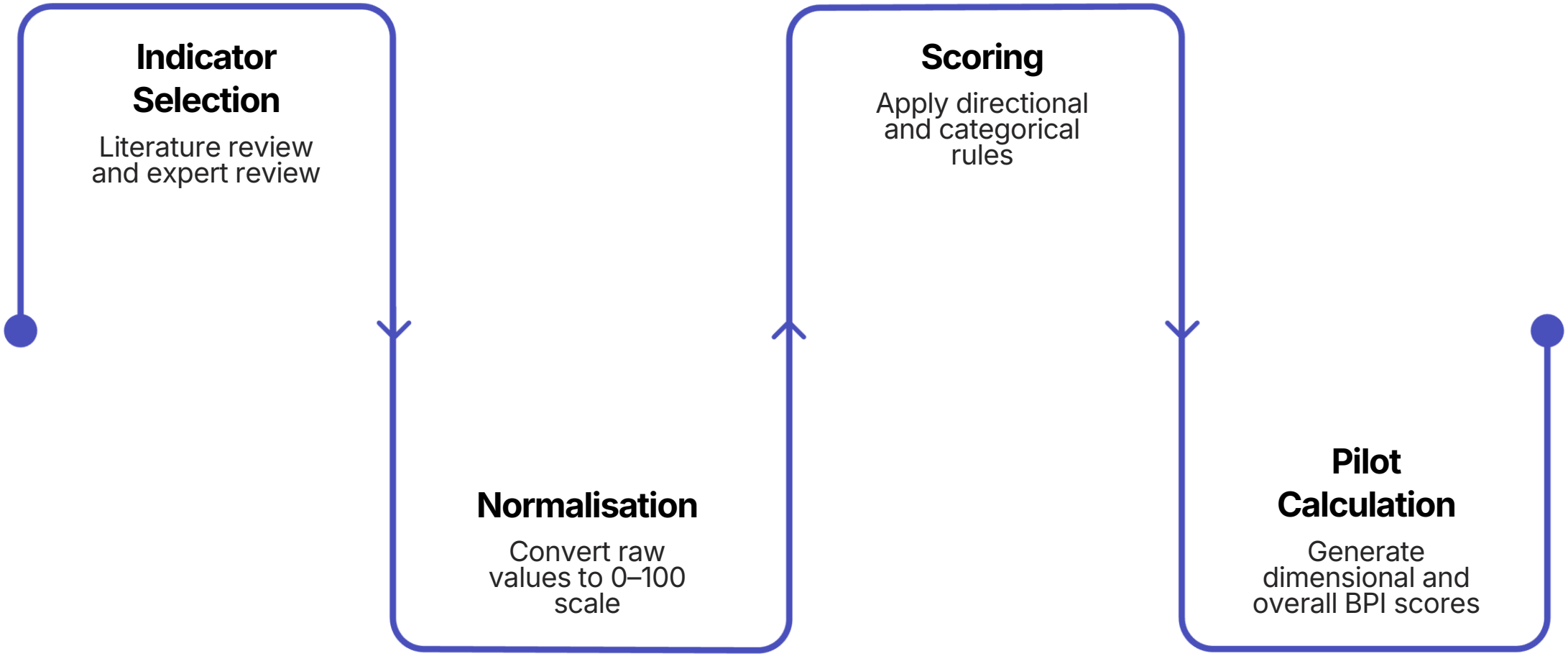
Usability

Data assessed for suitability for normalisation and BPI scoring.

WP2 — Creation and Analytical Development of the BPI

WORK PACKAGE 2 | LEAD: BURSA TECHNICAL UNIVERSITY

WP2 focused on transforming the WP1 evidence into a functioning Blue Port Index. BTU developed a methodological framework providing a transparent, comparable and reproducible approach to Blue Port performance assessment.



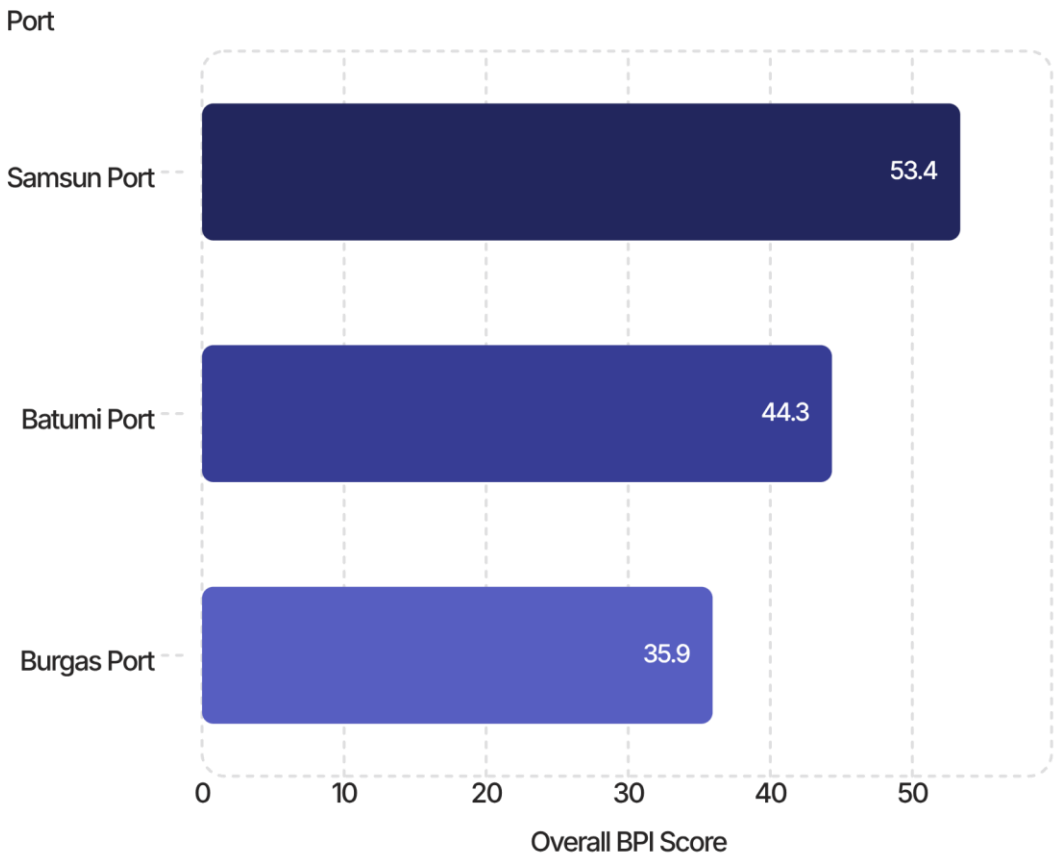
The indicator framework was refined through a **Delphi-type expert review process**, prioritising relevance, measurability and data availability. Only indicators supported by identifiable, auditable evidence were retained.

BPI Methodological Framework — Normalisation and Scoring

Because the BPI combines indicators expressed in different units — percentages, monetary values, quantities, time-based measurements and categorical responses — a standardised scoring procedure was required. All raw indicator values are converted to a common **0–100 scale**.

Methodological Component	Approach Applied in Pilot
Indicator selection	International frameworks and academic literature; refined through expert review on relevance, measurability and data availability
Positive-direction indicators	Higher raw values correspond to higher performance scores; normalised accordingly
Negative-direction indicators	Lower raw values represent better performance; scoring direction reversed during normalisation
Categorical indicators	Step scores of 100, 50 or 0 applied according to full availability, partial availability or absence
Weighting	Equal weighting applied during pilot phase (three-port sample insufficient for data-driven weighting)
Sub-index calculation	Indicator scores aggregated using arithmetic means within dimensions
Overall BPI	Arithmetic mean of Connectivity, Sustainability and Resilience (33.33% each)

Pilot BPI Scores — Comparative Results

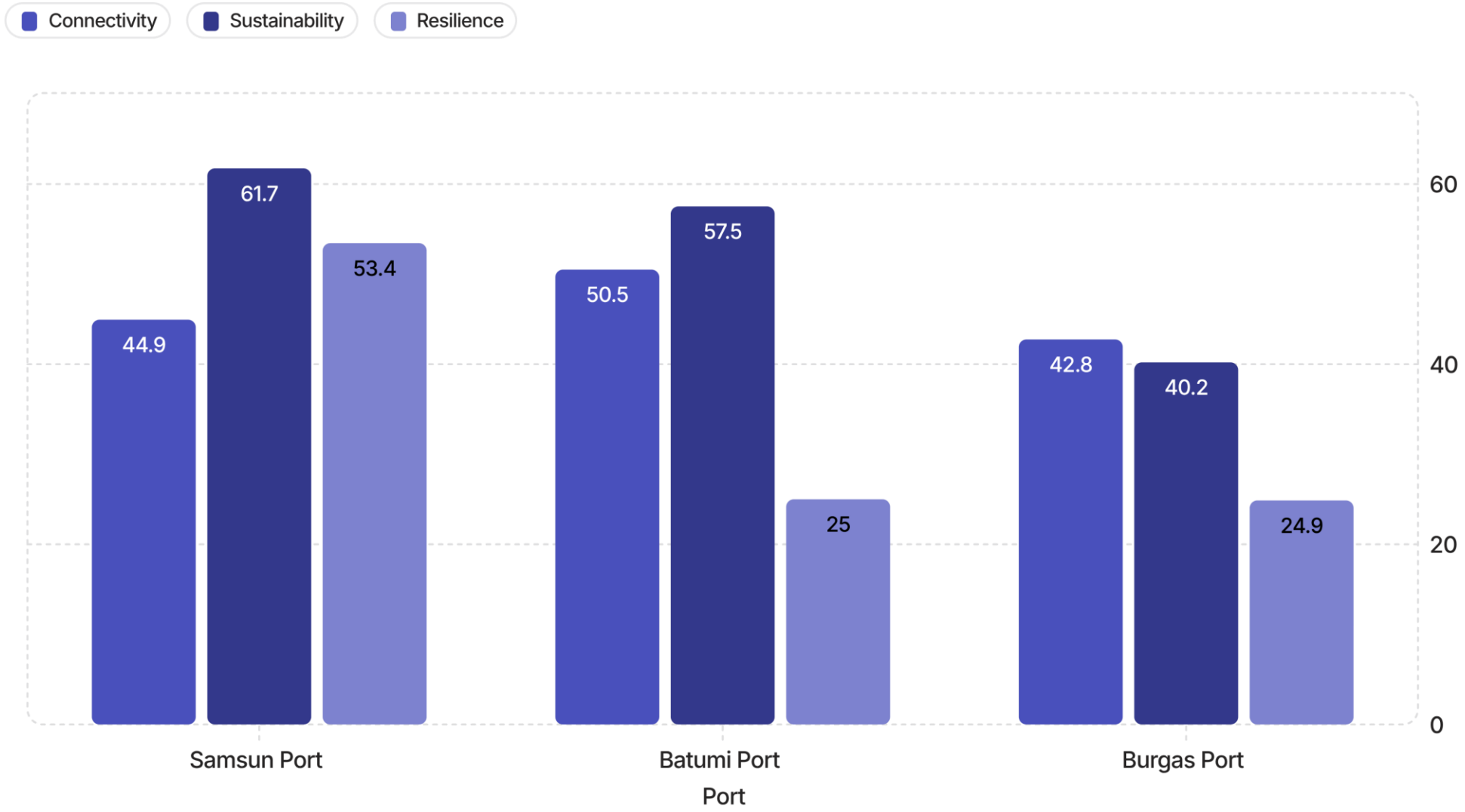


Interpreting the Results

These results are **pilot findings** based on three representative ports and the data available during the reporting period. They do not constitute national rankings of all ports in the respective countries.

Equal weighting was adopted as a transparent and scientifically defensible approach, with each of the three main dimensions contributing equally (33.33%) to the overall BPI score.

Dimensional BPI Scores — Port Comparison



Sustainability scores were highest across all three pilot ports, while Resilience emerged as the dimension with the most significant gaps — particularly for Batumi and Burgas ports. All three pilot ports scored 0 on the Climate Change Adaptation Plan and Operational Resilience Plan indicators, highlighting a common regional challenge requiring targeted policy action.

Pilot Port Findings — Samsun Port, Türkiye

Overall BPI Score: 53.37

- **Connectivity:** 44.94
- **Sustainability:** 61.74
- **Resilience:** 53.44

Key Findings

Relative strengths: Physical infrastructure, waste-management and renewable-energy-related indicators performed well.

Areas for improvement: Digitalisation, gender-related indicators and formal climate-adaptation and operational-resilience planning require further development.

Pilot Port Findings — Batumi Port, Georgia

Overall BPI Score: 44.34

- **Connectivity:** 50.50
- **Sustainability:** 57.52
- **Resilience:** 25.00

Key Findings

Relative strengths: Strong performance in social connectivity and selected environmental-transparency indicators.

Areas for improvement: Renewable-energy use, some waste and infrastructure indicators, and climate-resilience planning show significant gaps.



Pilot Port Findings — Burgas Port, Bulgaria

Overall BPI Score: 35.94

- **Connectivity:** 42.75
- **Sustainability:** 40.20
- **Resilience:** 24.87

Key Findings

Relative strengths: Female employment (score: 100), selected digital-connectivity indicators and eco-friendly practices (90%) showed strong results.

Areas for improvement: Trade volume, renewable-energy and R&D-related indicators received lower values.

Analytical Findings and Policy Relevance

The pilot BPI generates not only a single composite score but also dimensional and indicator-level findings that identify different types of strengths, weaknesses and capacity gaps across the three pilot ports. These findings provide direct input to the Blue Port Road Map and regional policy directions.



Regional Climate Resilience

All three pilot ports scored 0 on Climate Adaptation Plan indicators — strengthening adaptation and operational resilience planning is the most critical cross-regional priority.



Green Port Technology

Differences in renewable-energy uptake across ports highlight opportunities for knowledge transfer and technology exchange among BSEC member states.



Digital Integration

Improving environmental and logistics data sharing, reducing data gaps and standardising reporting frameworks are critical for scaling the BPI to additional ports.



Human Capital and Inclusion

Gender-related and workforce-diversification indicators reveal variation across pilot ports — Burgas showed strong female employment results while other gaps remain regionally.

Second Transnational Project Meeting — Batumi, 14 May 2026

The Second Transnational Project Meeting was held in Batumi, Georgia, on 14 May 2026, hosted and coordinated by the Tourism Institute. On the second day of the meeting, a critical coordination was established between the completion of the data collection process under WP1 and the transition to the analytical work under WP2.



Second Transnational Project Meeting — Batumi, 14 May 2026

WP1 Review

Data from Samsun, Burgas and Batumi ports reviewed; remaining gaps and quality issues assessed.

BPI Methodology Reviewed

Preliminary BPI calculations presented and comparative results discussed within the consortium.

Digital Platform Discussed

BFU presented the concept and expected functional structure of the digital BPI platform.

Road Map Initiated

Initial Blue Port Road Map structure and four regional policy directions presented by the Tourism Institute.

WP3 — Digital Platform for the Blue Port Index

WORK PACKAGE 3 | LEAD: BURGAS FREE UNIVERSITY

Platform Concept Presented at TPM2

During the Second Transnational Project Meeting in Batumi, BFU presented the concept and expected functional architecture of the digital BPI platform. The platform is designed to transform the analytical BPI framework into an accessible, interactive digital tool for port stakeholders and policy makers.

BFU was confirmed as the partner responsible for leading subsequent development. Main WP3 implementation extends into the subsequent project period.
https://pcwebsite.eu/blueforblack/edit-port

Proposed Platform Features

- Country and port profiles
- Index calculation tools
- Score-visualisation dashboards
- Downloadable outputs and reports
- Inputs for the Blue Port Road Map process

Website Structure 3 Steps Overview

Home

Add Port 1

Select Port 2

Edit Port 3



Key Pages Overview

How to Add, Select and Edit a Port in the Website.

1

Add Port

Select the country of origin for the port from the drop down menu and write the name of the port. Click “Save Form” to store the port in the data base. Reload the page to erase all the data entered or click Cancel.

2

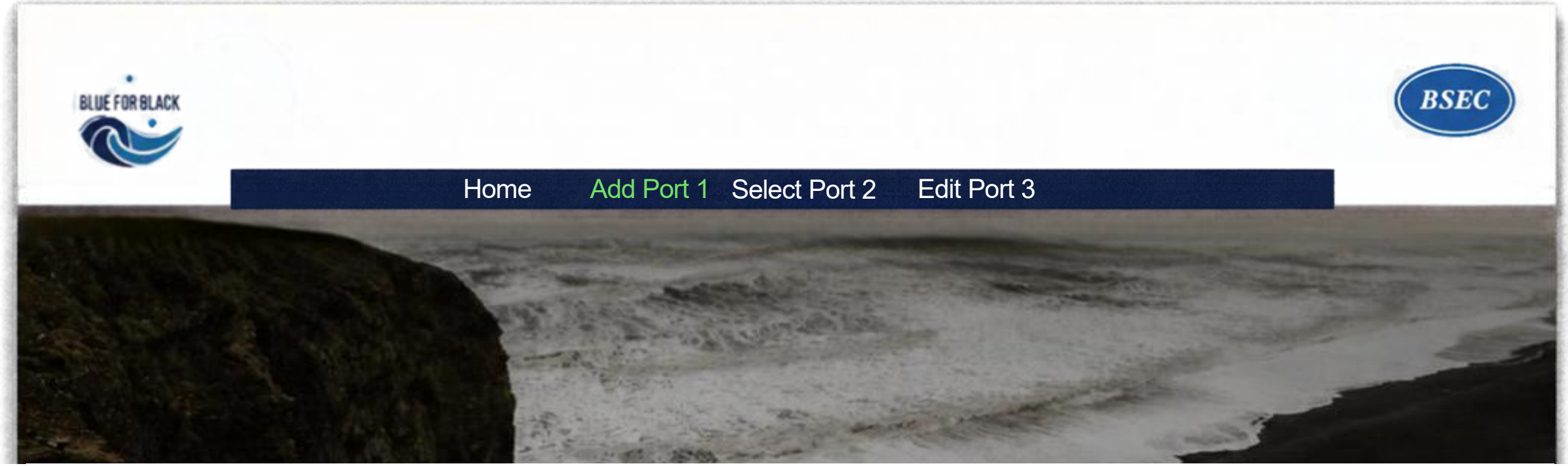
Select Port

Select witch port to edit or fill with data by clicking on its name. Here you can also search for a port by its name or country of origin or by the year the data was taken.

3

Edit Port

Fill the data for the selected port in step 2 and click “Save Form” to store all the data for the port in the data base. Reload the page to erase all the data entered.



Country of Origin

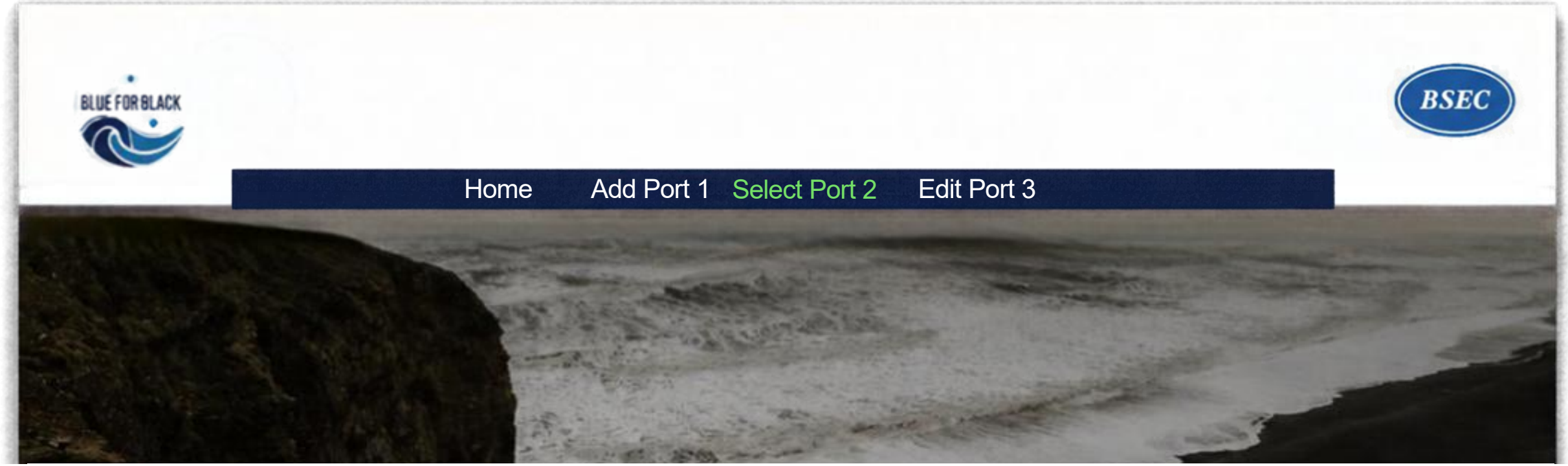
-- Select Country --

Port Name

Enter port name...

Save Form

Cancel



Country of Origin

- Select -

Port Name

Year of Data

Search

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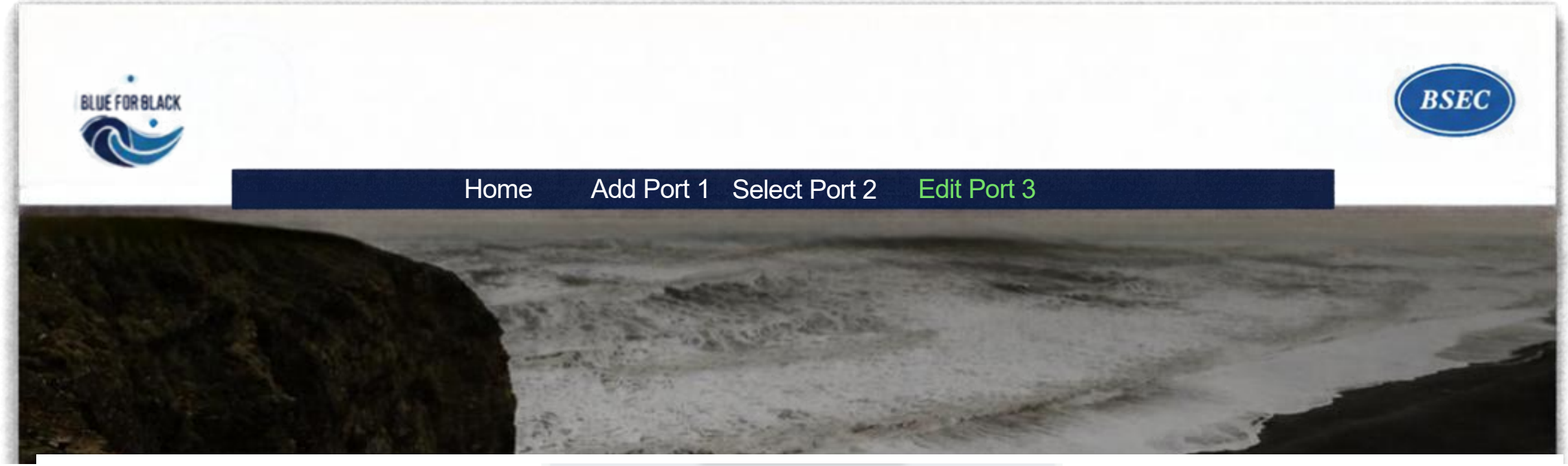
Batumi

Burgas

Constanca

Haidarpasa

Port of Varna



2. Sustainability	**0.00**
L Environmental Management (EM)	0.00
L Emission Impact (EI)	0.00
3. Resilience	**0.00**
L Resilience to Climate Change (RC)	0.00
L Disaster Preparedness (DP)	0.00
L Commercial Durability (CD)	0.00

33

Port Data Entry Cards

Enter the corresponding values for the port in the fields next to the indicators.

1. Connectivity

Digital Connectivity

Digitalization Budget Ratio (%)
Ratio to budget (Max 5%)

SAR Investment (%)
Investment ratio (Max 5%)

Existence of Port SAR Plan

Save Form

WP4 — Blue Port Road Map

WORK PACKAGE 4 | LEAD: TOURISM INSTITUTE

WP4 is responsible for developing a common Blue Port Road Map framework based on BPI findings. The Tourism Institute will coordinate the common framework, after which each participating country is expected to develop its own national Road Map. Main WP4 implementation is scheduled for the subsequent project period.

1. Regional Climate Resilience

Strengthening climate-change adaptation and operational resilience planning across Black Sea ports.

2. Green Port Technology

Encouraging exchange of renewable-energy and environmentally friendly port practices and knowledge transfer.

3. Digital Integration

Improving environmental and logistics data sharing and reducing data gaps through standardisation.

4. Human Capital and Inclusion

Supporting greater participation of women and diversification of the maritime workforce across BSEC countries.

WP5 — Dissemination and Visibility

WORK PACKAGE 5 | COORDINATION: BURGAS FREE UNIVERSITY

During the first reporting period, dissemination focused on establishing the project's public presence and communicating key implementation milestones. The **Blue for Black project website** (https://blueforblack.net/) was established as the main public information platform, presenting the project objectives, partnership, work packages and implementation updates.

1. Website

blueforblack.net — main public platform for project objectives, partnership and progress.

2. Instagram

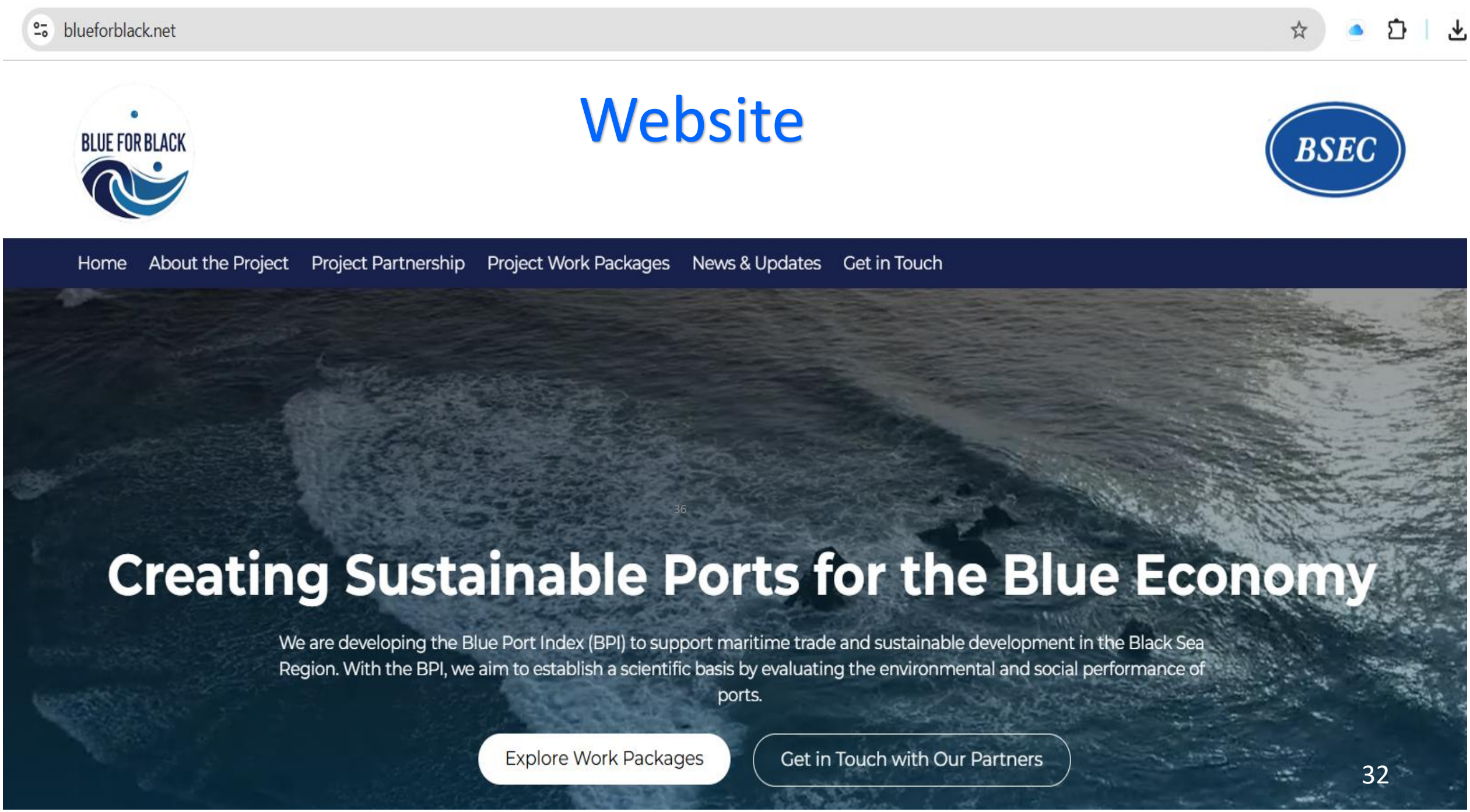
@blueforblack.bsec — visual project communications and meeting updates.

3. X (Twitter)

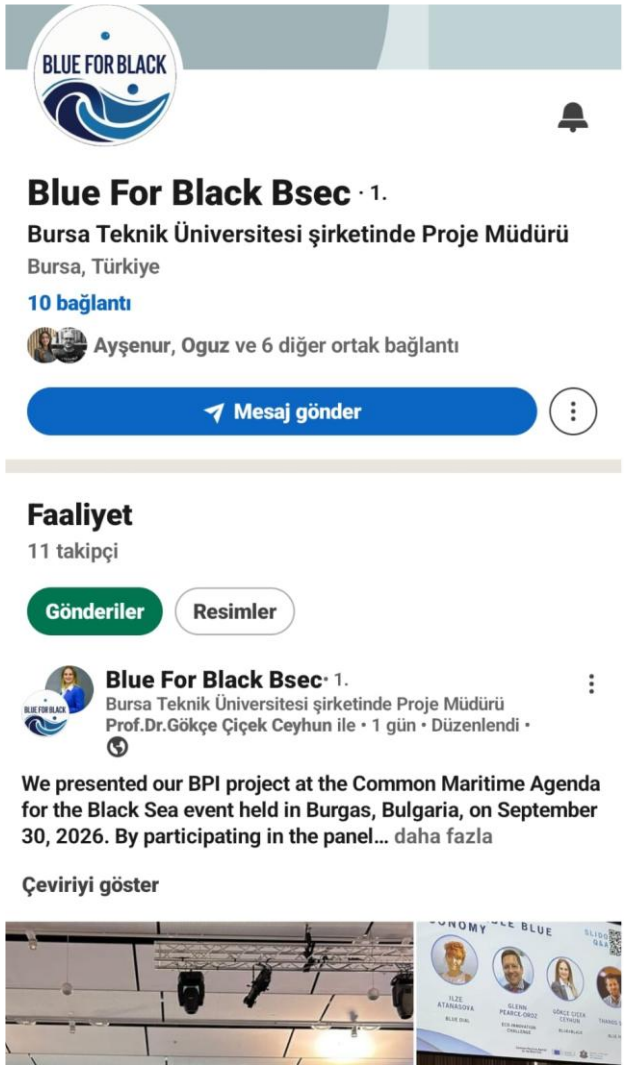
@Blueforblack_ — real-time project news and stakeholder engagement.

4. LinkedIn

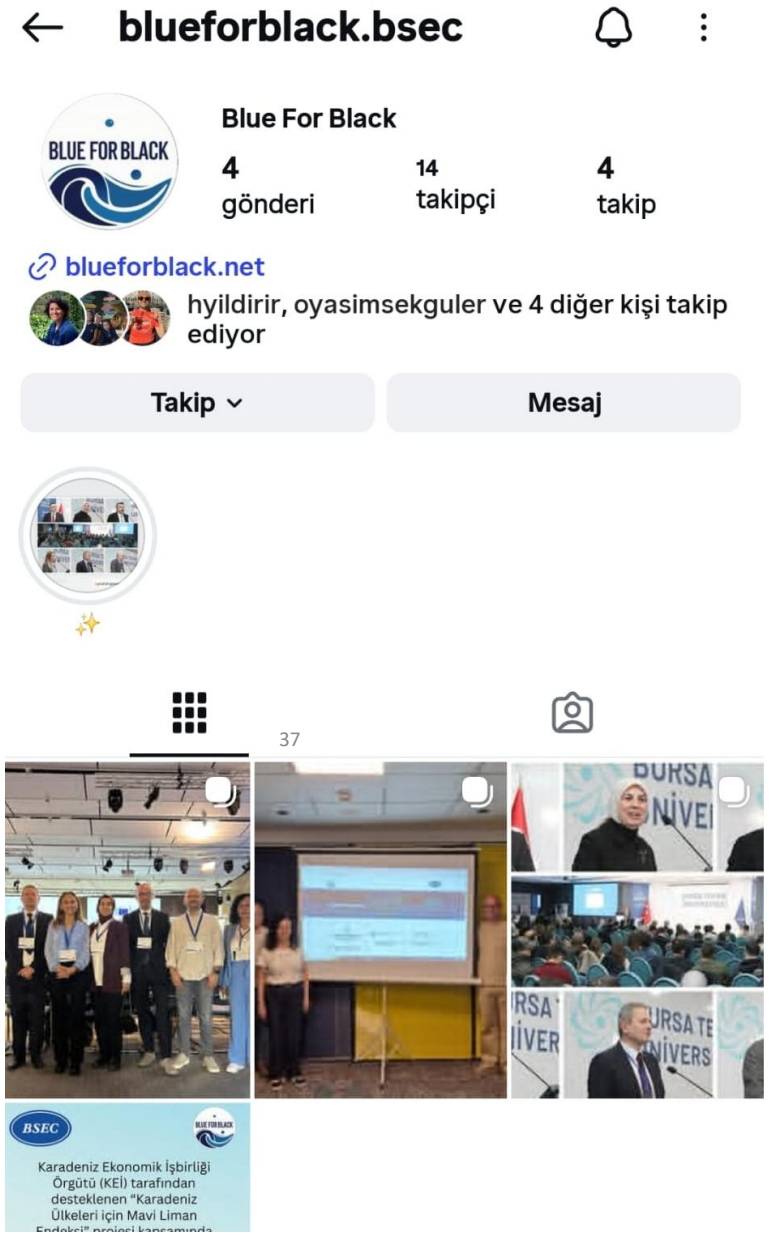
Blue for Black BSEC — professional network engagement and partner communications.


blueforblack.net
BLUE FOR BLACK
Website
BSEC
Home
About the Project
Project Partnership
Project Work Packages
News & Updates
Get in Touch
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Creating Sustainable Ports for the Blue Economy
We are developing the Blue Port Index (BPI) to support maritime trade and sustainable development in the Black Sea Region. With the BPI, we aim to establish a scientific basis by evaluating the environmental and social performance of ports.
Explore Work Packages
Get in Touch with Our Partners

LinkedIn



Instagram



X (Twitter)



5. Other Dissemination Activities

We presented our BPI project at the Common Maritime Agenda for the Black Sea event held in Burgas, Bulgaria, on September 30, 2026. By participating in the panel titled "Session 3 – Driving the Sustainable Blue Economy: Innovation, Ports and Investment," we had the opportunity to share information about BPI with Black Sea countries. In the session we have explored how innovative solutions and smart investments can accelerate sustainable development across the Black Sea blue economy.







Benefits of Blue Port Index for BSEC

The Blue Port Index can benefit BSEC Countries in many ways. For example;

- **Ecosystem Protection:** Promotes practices to reduce the impacts of port activities on marine ecosystems.
- **Attracting Investments:** Ports with high sustainability performance and higher index values become more attractive to investors who care about environmental standards.
- **Policy and Regulatory Compliance:** Encourages ports to comply with national and international environmental regulations.



Benefits of Blue Port Index for BSEC

Policy Development: Contributes to the development of sustainable policies for port management by providing data for policy makers.

Performance Monitoring: Enables regular monitoring and reporting of ports' sustainability performance.

Brand Value: A high index value increases the competitiveness of ports and makes them internationally recognized and preferred.



Conclusion

The Blue Port Index is an assessment tool used to measure the environmental performance of seaports. This index is designed to demonstrate the effectiveness of ports in terms of environmental management and sustainability of their operations.

The blue port index will play an important role in shaping the policy measures to be taken by revealing the current state of the performance of the Black Sea ports within the framework of the blue economy.

Conclusion

The sustainable development of the blue economy offers a number of opportunities for the BSEC countries. These opportunities include increasing employment, ensuring economic diversification and strengthening environmental sustainability. However, the full exploitation of this potential requires regional co-operation and co-ordination.

In order to protect the fragile ecosystem of the Black Sea and prevent its over-exploitation, it is crucial to develop common policies and strategies among the BSEC countries. In this way, the BSEC countries can achieve the goals of economic growth and environmental sustainability, maximizing the benefits of the blue economy.

Suggestions for the future

- There are various indexes known and used around the world as The Blue Economy Index, Environmental Port Index (EPI), and The Smart Port Index. In the literature review, no direct research in the form of a "blue port index" was found. However, the blue port index will be implemented for the first time in the Black Sea with this project. The next step is to develop a blue port index for all Black Sea ports with a larger budget and the participation of more countries.


We don't inherit the earth
from our ancestors,
we borrow it from our children.