EMD
European Maritime Day
IN MY COUNTRY

#EMDinMyCountry

BLACK SEA BEYWATCH

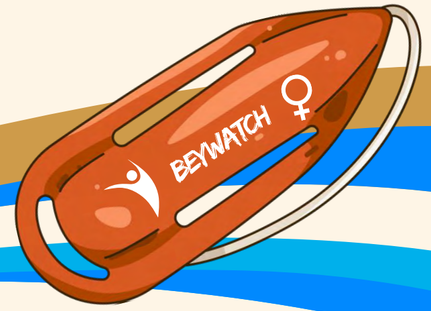
Black Sea Blue Economy Youth and Women Watch

Tuesday, 20 October 2026

Session: New Technologies at the Service of the Port Cities Ecosystems: How to Embrace Technological Advancement?

Energy Transitions in Port City Territories

Carola Hein | PortCityFutures, Delft
University of Technology, COST
PACT, Professor



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

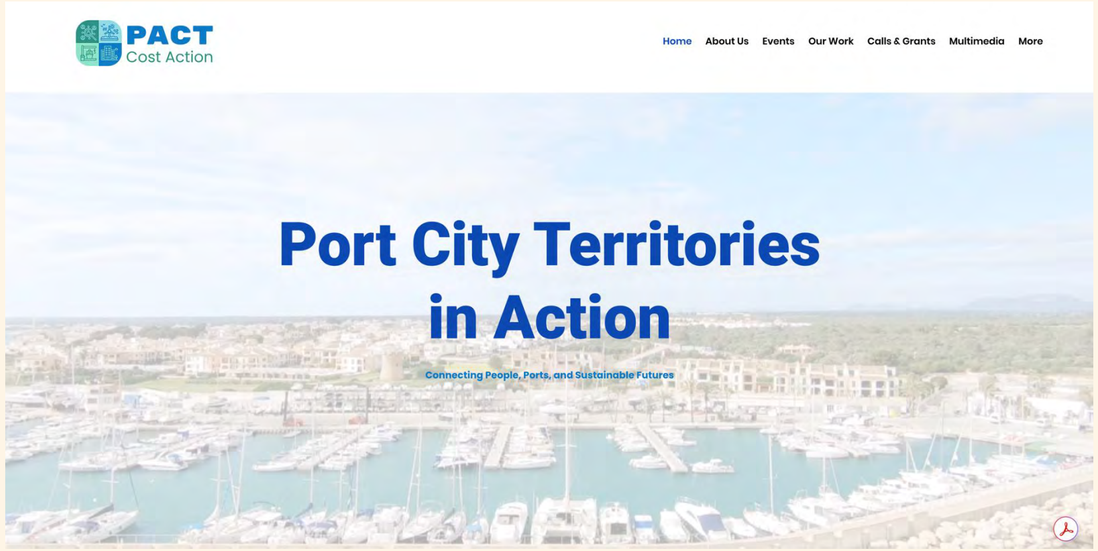
ICBSS
INTERNATIONAL CENTER FOR BLACK SEA STUDIES
BLACK SEA ECONOMIC COOPERATION

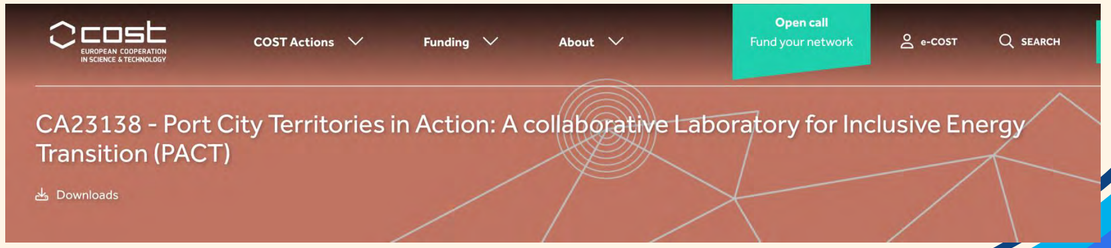
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COST Action PACT

Port City Territories in Action: A Collaborative Laboratory for Inclusive Energy Transition (PACT) is a European Cooperation in Science and Technology (COST) Action project uniting an interdisciplinary group of researchers and stakeholders to address the challenges of energy transition in port city territories.

Through six key objectives, we develop innovative, inclusive, and collaborative approaches to create sustainable futures.





Mapping

We gather and organize data to understand the spatial, environmental, and socio-cultural dynamics of port city territories. This forms a foundation for addressing energy transition challenges with a holistic perspective.

Reframing

We reimagine how ports, cities, and their communities interact, focusing on collaborative governance and inclusive solutions to support energy transitions and sustainable development.

Co-Creating

By uniting diverse stakeholders through workshops and collaborative activities, we develop practical, innovative strategies tailored to the unique challenges of port city territories.

Including

We ensure that all voices are heard, emphasizing the active participation of local communities, marginalized groups, policymakers, and industry leaders in shaping equitable and sustainable futures.

Envisioning

We craft inspiring, evidence-based visions for the future of port city territories, demonstrating how integrated solutions can support energy-conscious, inclusive development.

Transmitting

We share lessons learned, tools, and methodologies across Europe, enabling other port city territories to adopt and adapt innovative practices for their energy transitions.

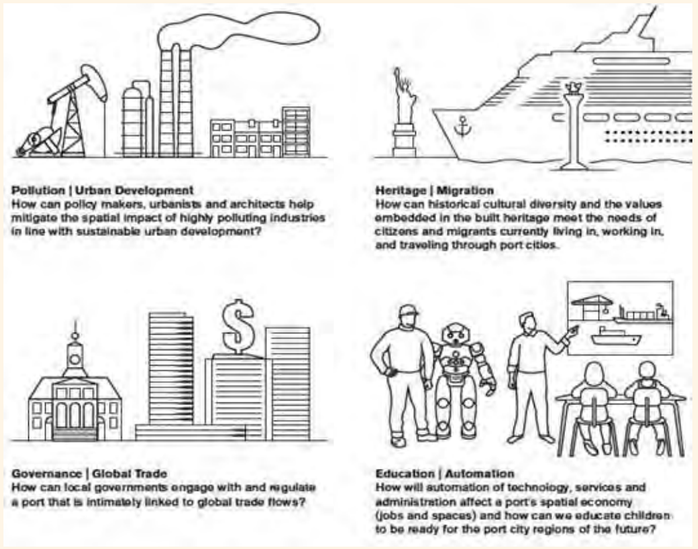


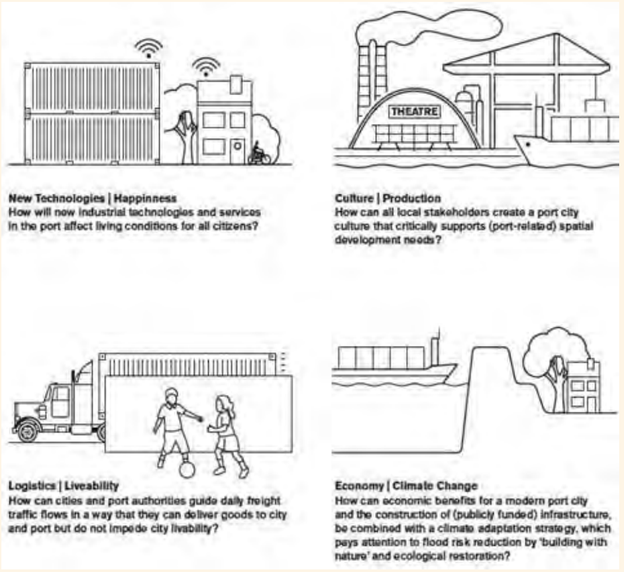
Systemic Responses, Ports as levers of Change and Port City Symbiosis

Port-city symbiosis

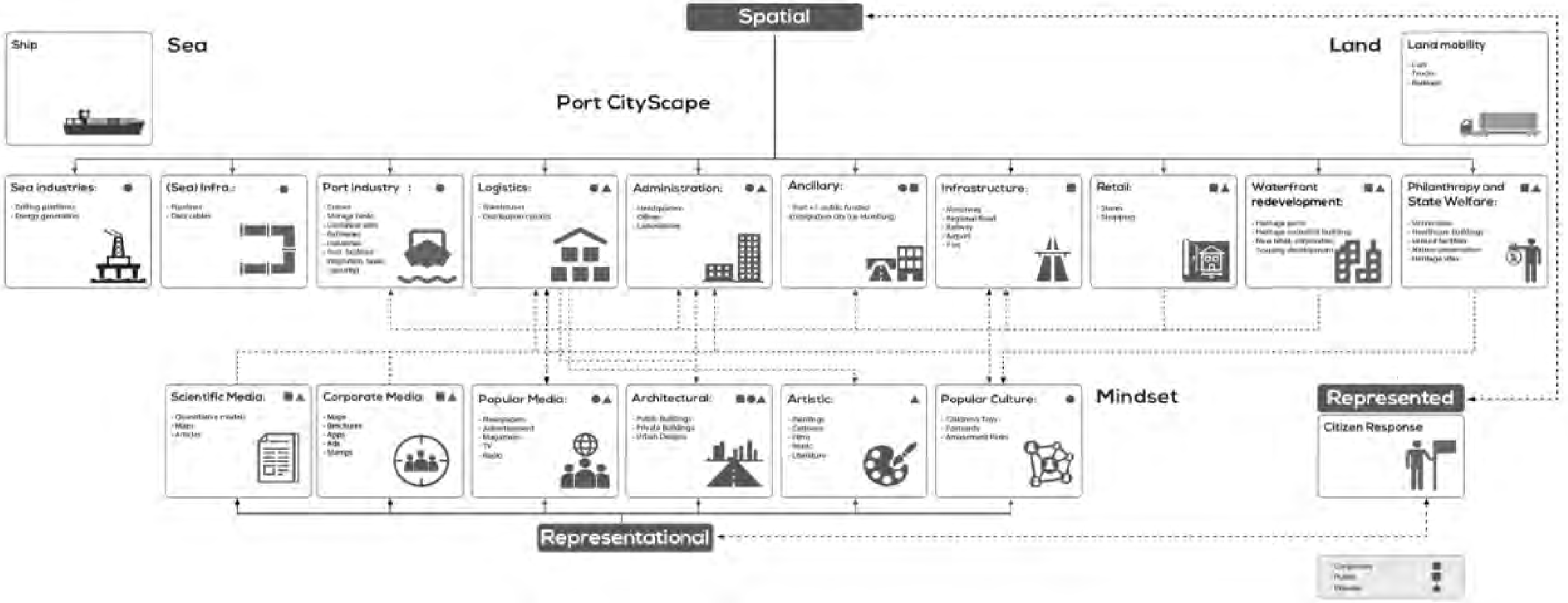
- Ports are essential for economics and well-being. Their functioning requires symbiosis with nearby territories and the planet.
- Ports need local buy-in. We need strategies to insert ports into nearby cities and territories (planning, education, governance)



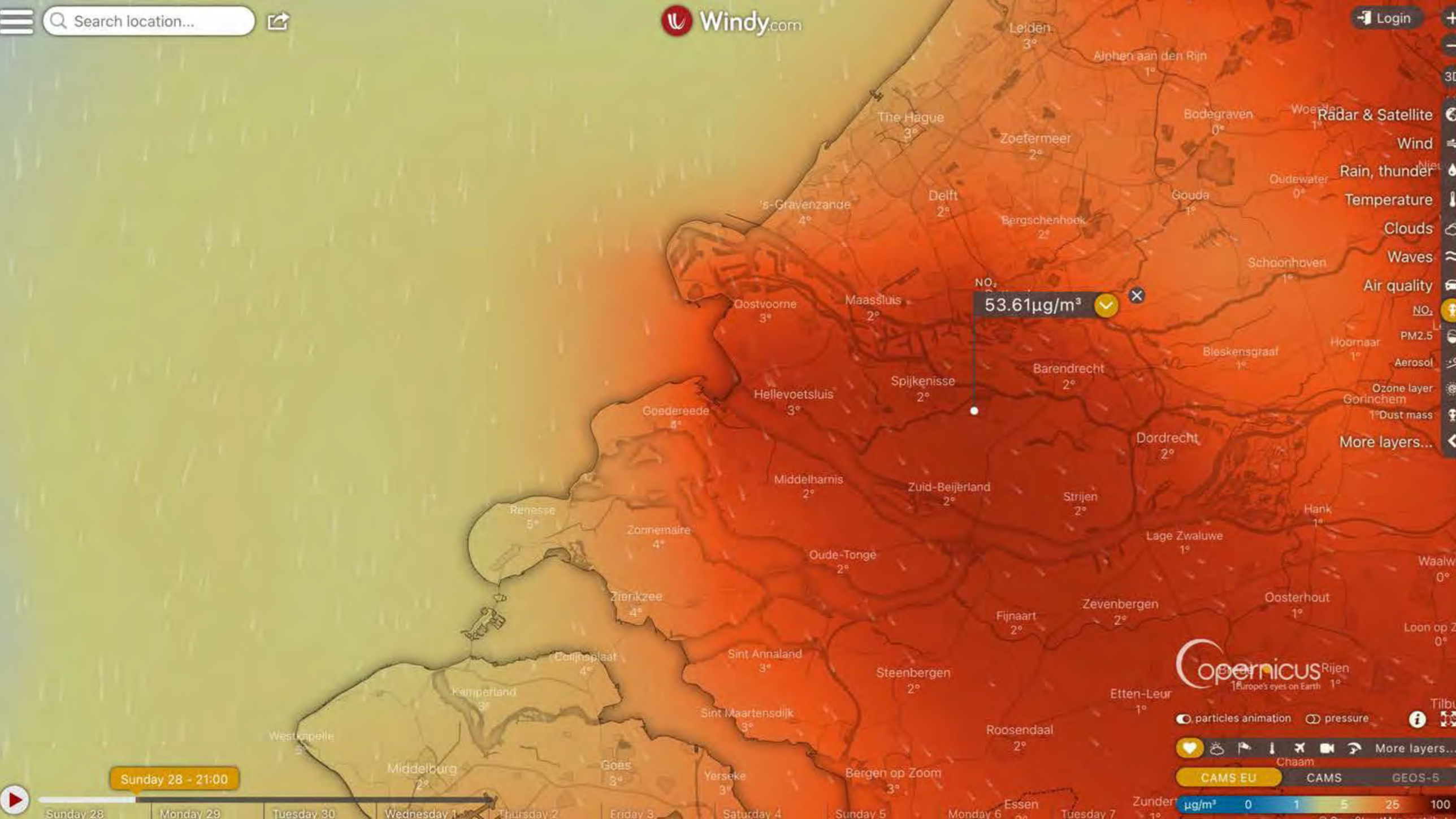




Port City Territories



Port City Scape@Carola Hein


Search location...
Windy.com
Login
Leiden
3°
Alphen aan den Rijn
1°
The Hague
3°
Zoetermeer
2°
Bodegraven
0°
Woerden
1°
Radar & Satellite
Wind
Rain, thunder
Temperature
Clouds
Waves
Air quality
's-Gravenzande
4°
Delft
2°
Bergschenhoek
2°
Gouda
1°
Oudewater
0°
Schoonhoven
1°
NO₂
53.61µg/m³
Oostvoorne
3°
Maassluis
2°
Hoornaar
1°
Bleskensgraaf
1°
PM2.5
Aerosol
Ozone layer
Dust mass
Barendrecht
2°
Spijkenisse
2°
Hellevoetsluis
3°
Goedereede
4°
Gorinchem
1°
Dordrecht
2°
More layers...
Middelharnis
2°
Zuid-Beijerland
2°
Strijen
2°
Hank
1°
Renesse
5°
Zonnemaire
4°
Lage Zwaluwe
1°
Oude-Tonge
2°
Zierikzee
4°
Fijnaart
2°
Zevenbergen
2°
Oosterhout
1°
Colijnsplaat
4°
Sint Annaland
3°
Steenbergen
2°
Kamperland
3°
Rijen
1°
Etten-Leur
1°
Sint Maartensdijk
3°
Roosendaal
2°
Westkapelle
5°
Middelburg
2°
Goes
3°
Yerseke
3°
Bergen op Zoom
3°
Essen
Chaam
Zunder
Sunday 28 - 21:00
Sunday 28
Monday 29
Tuesday 30
Wednesday 1
Thursday 2
Friday 3
Saturday 4
Sunday 5
Monday 6
Tuesday 7
particles animation
pressure
More layers...
CAMS EU
CAMS
GEOS-5
µg/m³
0
1
5
25
100

RTM

Rotterdam, NL

New Waterway

PORT

RTM (%) 58.2

	RTM
Liquid	7,050
Dry bulk	939
Container	5,474
Specialized	197
General	5,162
Cruise ship	
Passenger	
Other	43
Vessels	18,865

41.8

	RTM
Liquid bulk	207,366
Dry bulk	70,612
Containers	127,901
RoRo	12,039
Other	21,713
Cargo (t)	439,631
Passengers	1,333

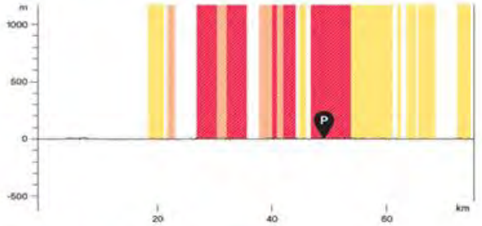
CITY

	RTM
	Greater Rotterdam
→ Capital national (km)	→ Amsterdam 58
→ Capital regional (km)	→ Antwerp 75
Area (km²)	563
Built-up area (km²)	283
Density (per km²)	2,191
Population	1,232,747
Population structure (%)	1 5 16.3 66.2 17.5
Distribution built area (%)	B A I D 60 1 12 27

TERRITORY

	RTM
	Groot-Rijnmond
Area (km²)	1,498
Density (per km²)	963
Population	1,441,452
Natura2000 (km²)	M T 1,866 20



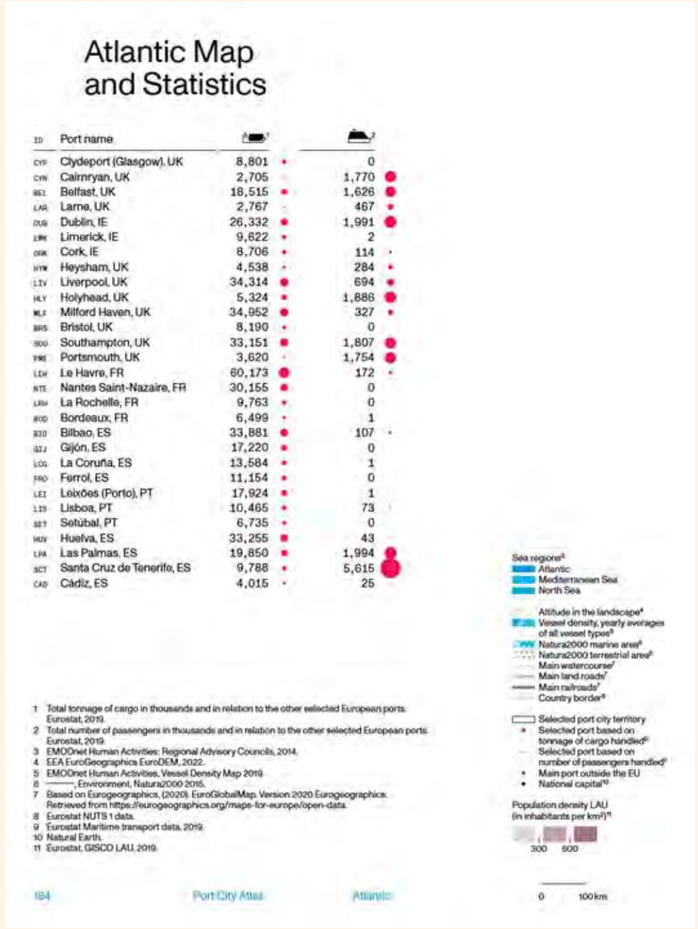




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Port-city symbiosis as lever for resilient territories

- Ports rely on and contribute to local development (port-city symbiosis)
- Port logistics intersects with urban transport and everyday life
- Ports shape entire territories crossing water and land (spatial footprint)



Atlantic Map and Statistics

ID	Port name		
CYF	Clydeport (Glasgow), UK	8,801	0
CYN	Cairnryan, UK	2,705	1,770
BEL	Belfast, UK	18,515	1,626
LAR	Larne, UK	2,767	467
DUB	Dublin, IE	26,332	1,991
LMK	Limerick, IE	9,622	2
ORK	Cork, IE	8,706	114
HYM	Heysham, UK	4,538	284
LIV	Liverpool, UK	34,314	694
HLY	Holyhead, UK	5,324	1,886
MLF	Milford Haven, UK	34,952	327
BRS	Bristol, UK	8,190	0
SOU	Southampton, UK	33,151	1,807
PME	Portsmouth, UK	3,620	1,754
LEH	Le Havre, FR	60,173	172
NTE	Nantes Saint-Nazaire, FR	30,155	0
LRH	La Rochelle, FR	9,763	0
BOD	Bordeaux, FR	6,499	1
BIO	Bilbao, ES	33,881	107
GIJ	Gijón, ES	17,220	0
LCG	La Coruña, ES	13,584	1
FRO	Ferrol, ES	11,154	0
LEI	Leixões (Porto), PT	17,924	1
LIS	Lisboa, PT	10,465	73
SET	Setúbal, PT	6,735	0
HUV	Huelva, ES	33,255	43
LPA	Las Palmas, ES	19,850	1,994
SCT	Santa Cruz de Tenerife, ES	9,788	5,615
CAD	Cádiz, ES	4,015	25

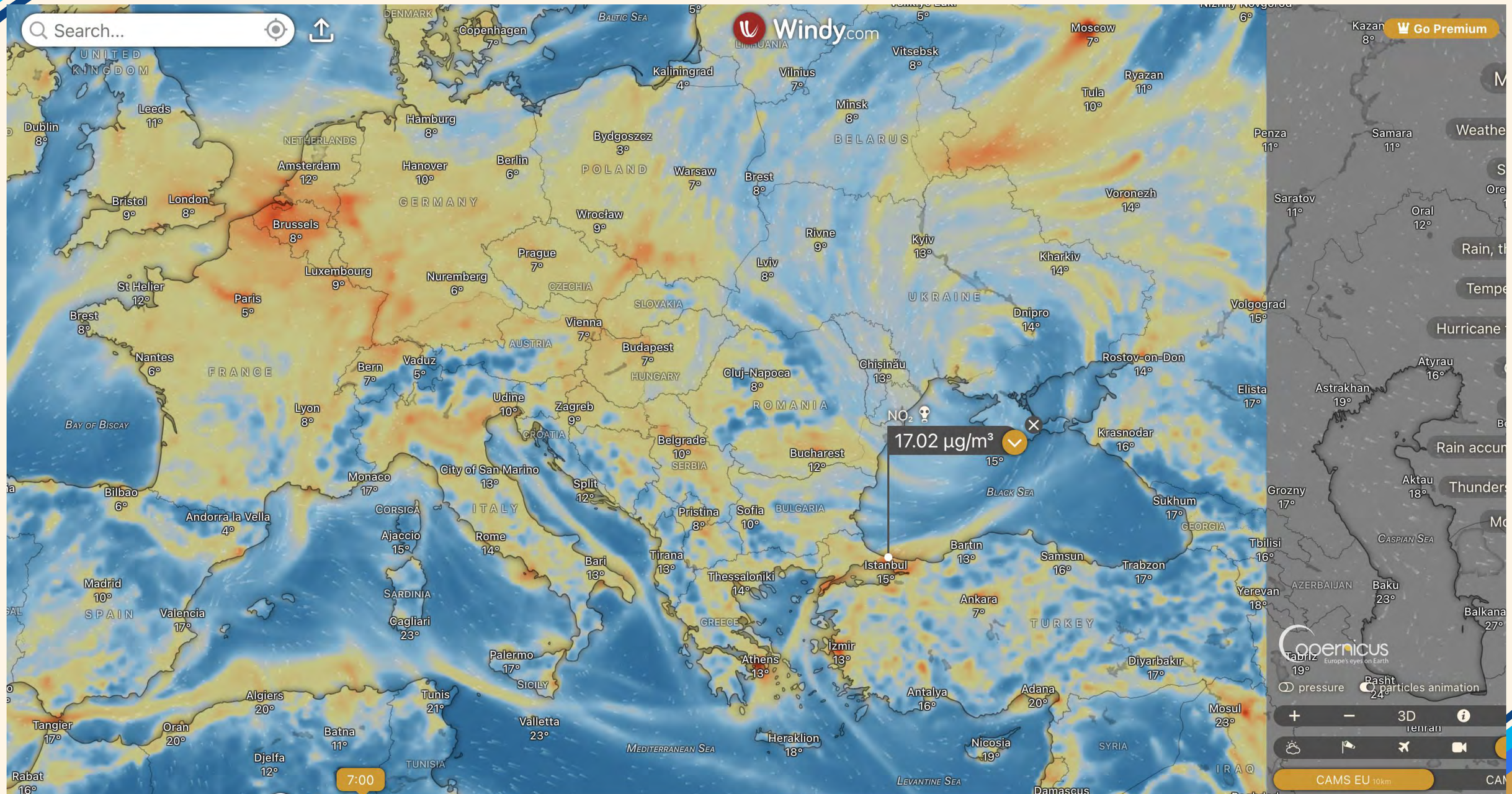
1 Total tonnage of cargo in thousands and in relation to the other selected European ports. Eurostat, 2019.
2 Total number of passengers in thousands and in relation to the other selected European ports. Eurostat, 2019.
3 EMODnet Human Activities: Regional Advisory Councils, 2014.
4 EEA EuroGeographics EuroDEM, 2022.
5 EMODnet Human Activities, Vessel Density Map 2019.
6 ———, Environment, Natura2000 2016.
7 Based on Eurogeographics, (2020). EuroGlobalMap, Version 2020 Eurogeographics. Retrieved from https://eurogeographics.org/maps-for-europe/open-data.
8 Eurostat NUTS 1 data.
9 Eurostat Maritime transport data, 2019.
10 Natural Earth.
11 Eurostat, GISCO LAU, 2019.

Sea regions[3]
Atlantic
Mediterranean Sea
North Sea
Altitude in the landscape[4]
Vessel density, yearly averages of all vessel types[5]
Natura2000 marine area[6]
Natura2000 terrestrial area[6]
Main watercourse[7]
Main land roads[7]
Main railroads[7]
Country border[8]
Selected port city territory
Selected port based on tonnage of cargo handled[9]
Selected port based on number of passengers handled[9]
Main port outside the EU
National capital[10]
Population density LAU (in inhabitants per km²)[11]
300 600
0 100 km

184 Port City Atlas Atlantic



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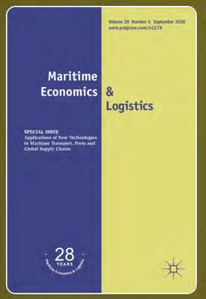
This special issue argues that we need to **embrace a holistic, inclusive approach to port city development, based on *ecosystems values*, embedded in various layers of capital: natural, cultural, social, human, industrial and creative.**

For transitions to happen, port city territories will have to nurture ecosystem values to unlock this capital. New governance constellations will have to be based on shared mindsets, deeper understanding of the interests of local communities, and a set of collaborative principles.

Home › Maritime Economics & Logistics › Article

Port city symbiosis: introduction to the special issue

Introduction to the Special Issue | Published: 13 March 2023
Volume 25, pages 211–229 (2023) Cite this article



Maritime Economics & Logistics
Aims and scope →
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Save article

Maurice Jansen & Carola Hein

Table 1 Port city symbiosis—an ecosystems approach

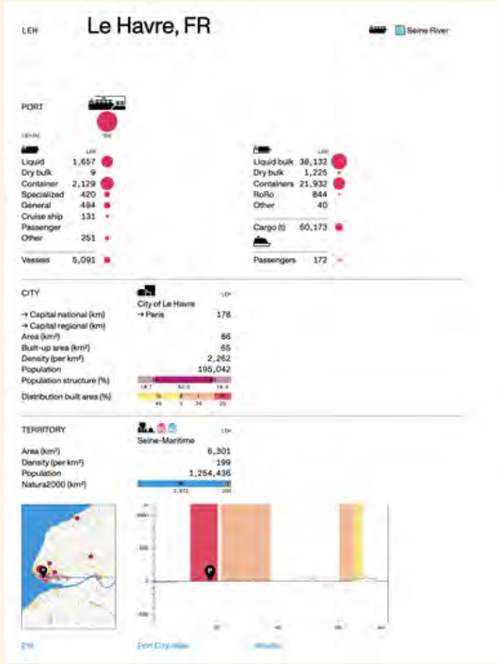
Capital	Examples	Share knowledge on	Nurture leads to	Neglect leads to
Creative Capital	Startups, entrepreneurs, intellectual property	Know what's next	Joint future	Separate future
Industrial Capital	Working capital, assets, equipment	Know what sells now	Earnings	Emissions
Human Capital	Labour, talent	Know how to make	Better jobs	Strikes
Social Capital	Social networks, connections	Know who matters	Young talent networks	Old boys networks
Cultural Capital	Heritage harbour, maritime museums, traditions and festivals	Know why it matters	Connected society	Disconnected society
Natural capital	River delta, sheltered ports	Know why it matters here	Protect and preserve	Pollute

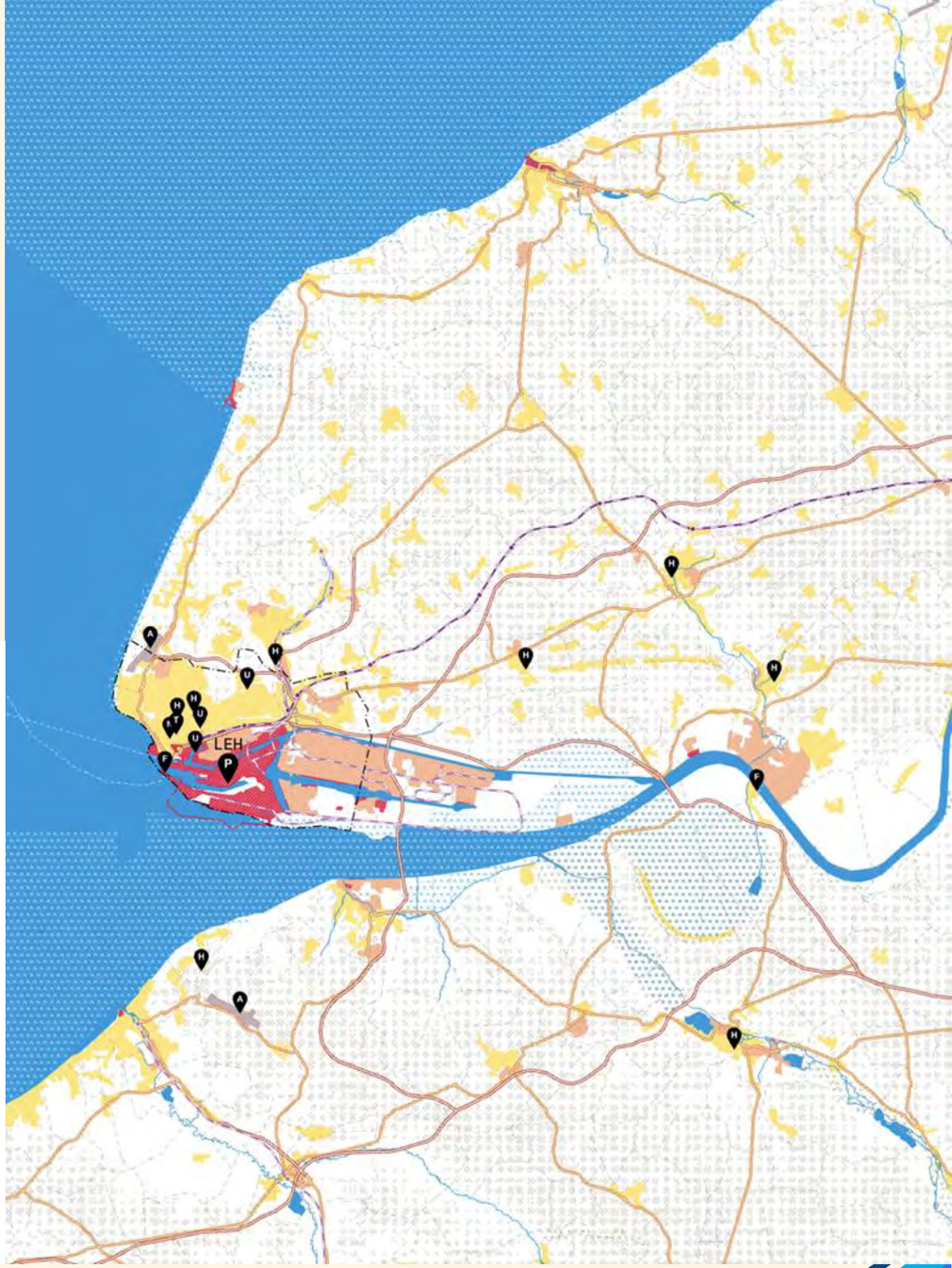
Source The authors

(River) Port City Atlas

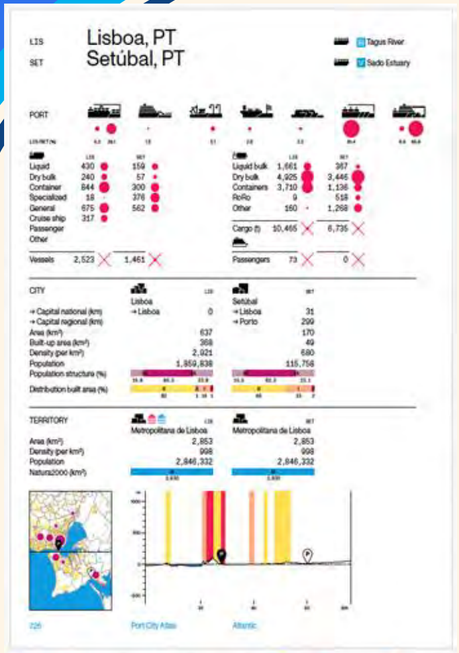
Method: GIS mapping, port city territories

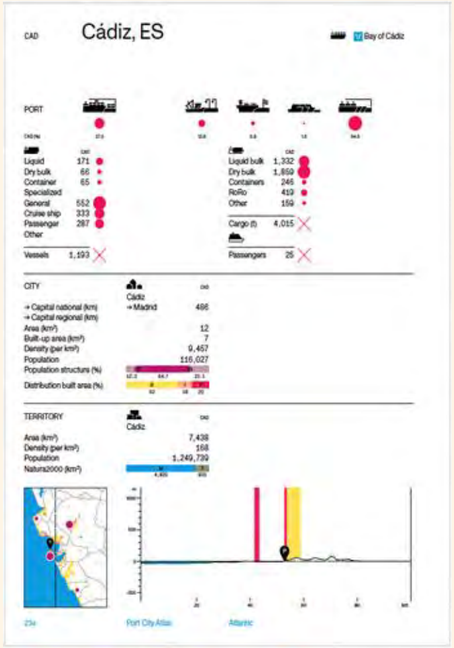
- Shows spatial conditions of port city territories across sea and land
- Connects spatial systems to governance conditions and planning opportunities for (river) port city territories
- Highlights the potential of small ports

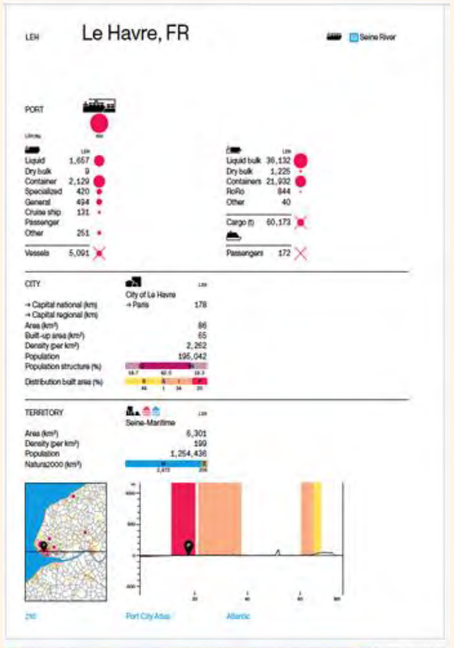


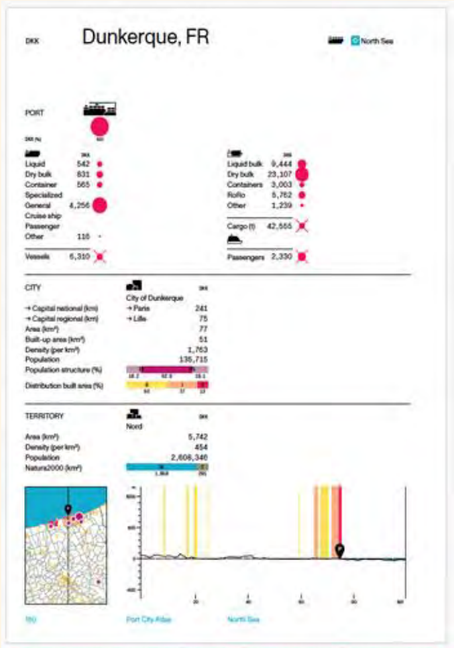


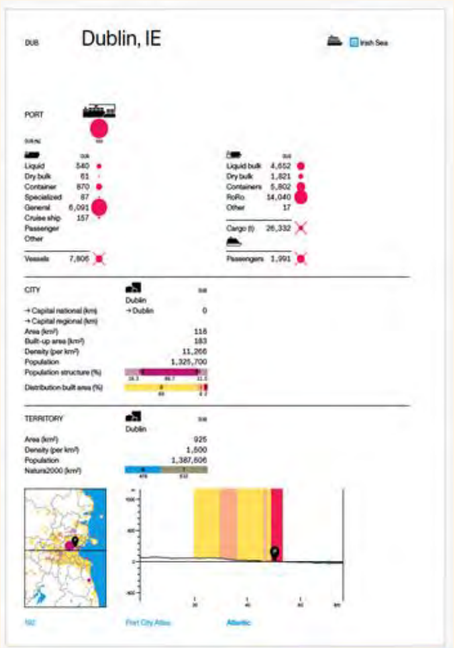
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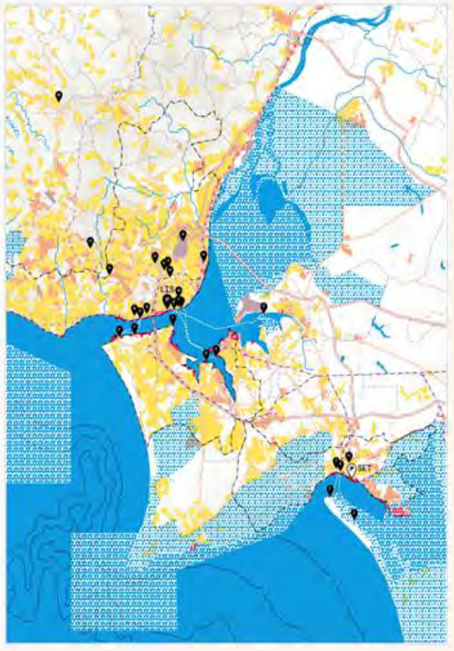


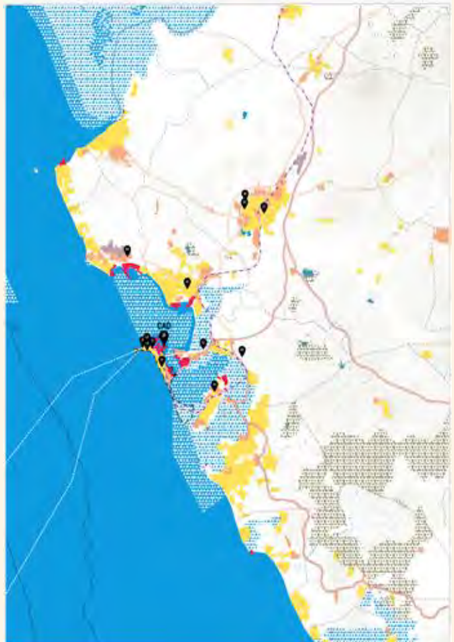


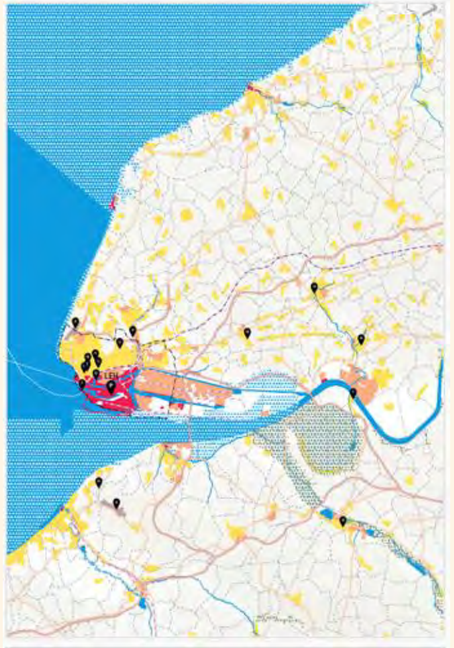




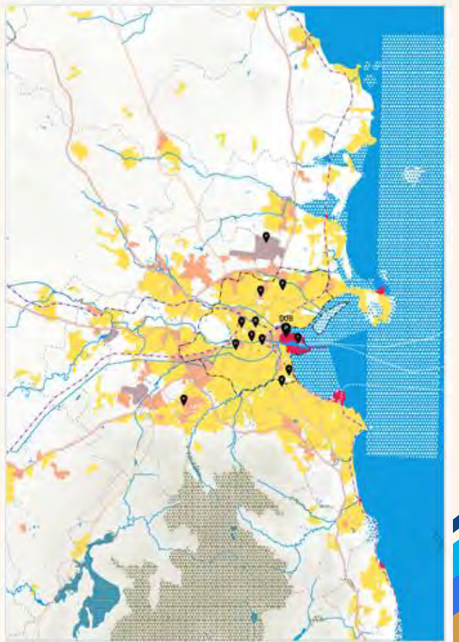




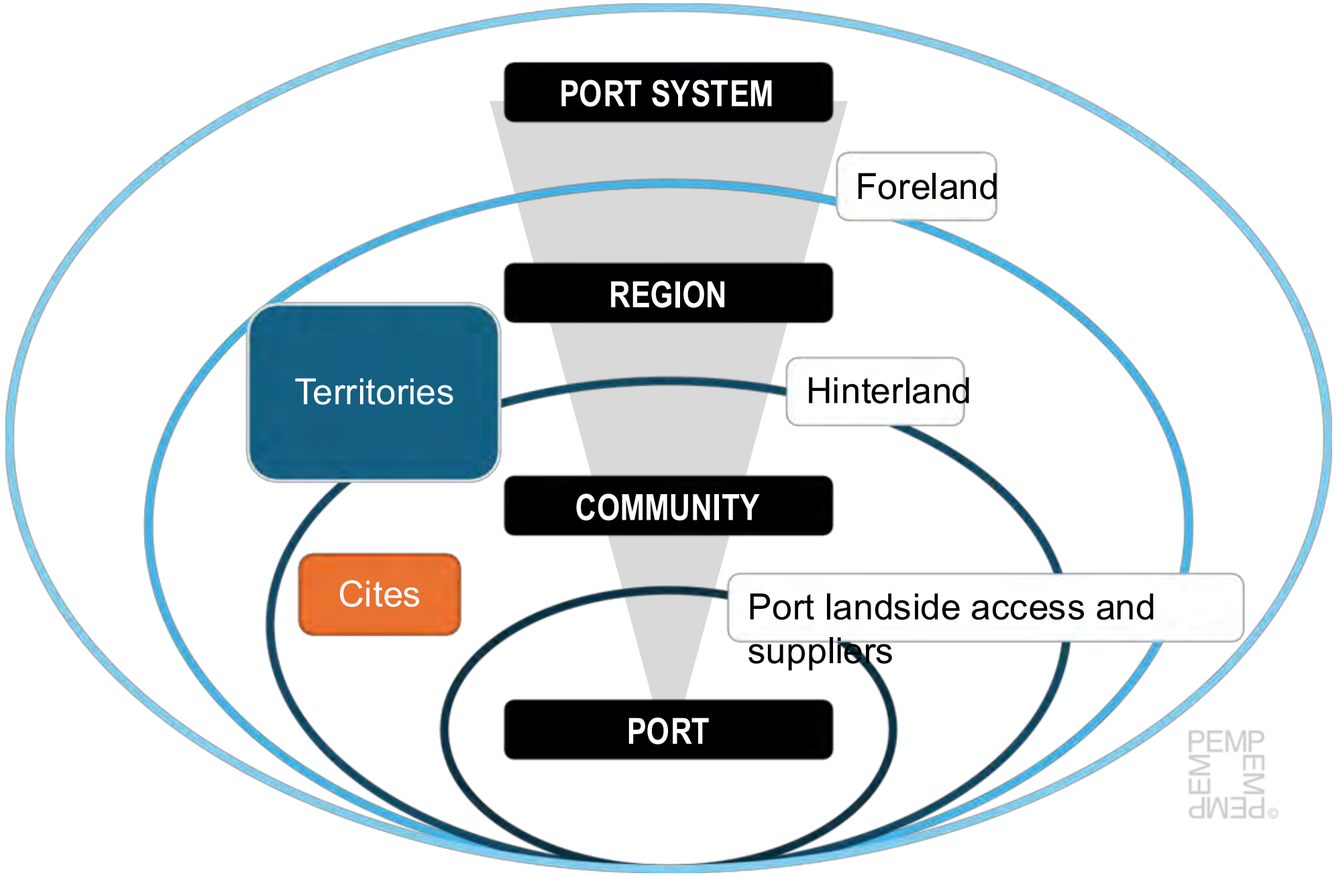








The Spatial Dimension



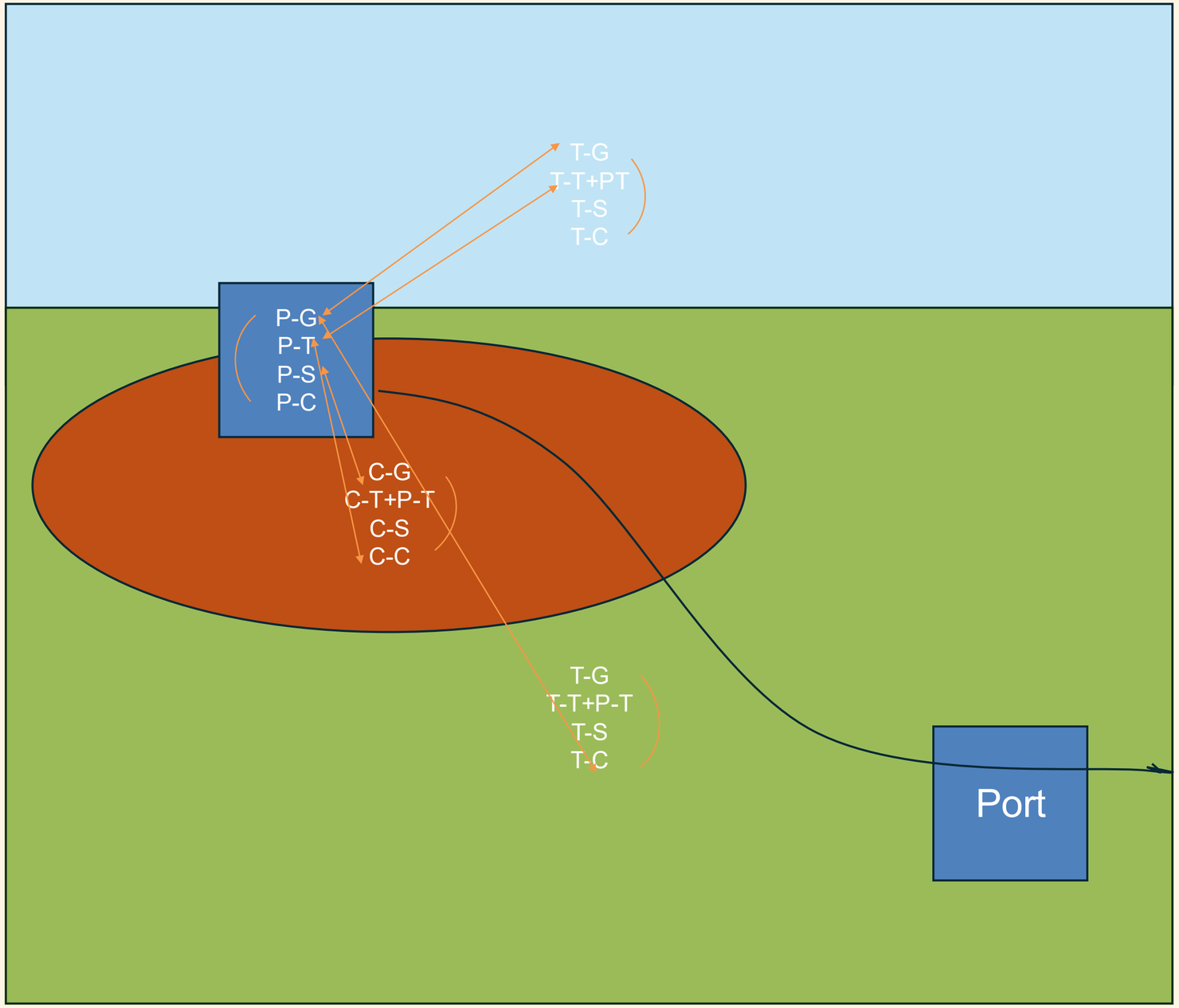
Adapted from: Brooks and Pallis (2012)

Energy

G: Generation
T: Transport
S: Storage
C: Consumption

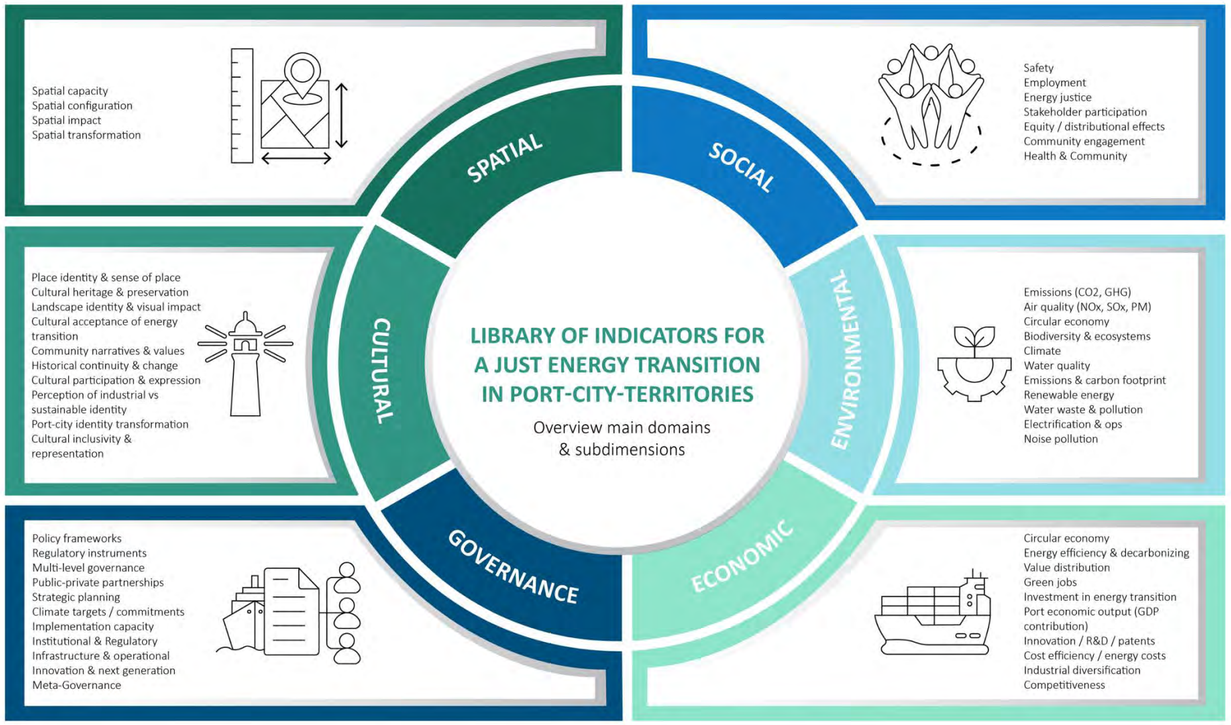
Dimensions

Governance
Finances
Environment
Social
Economic
…
…



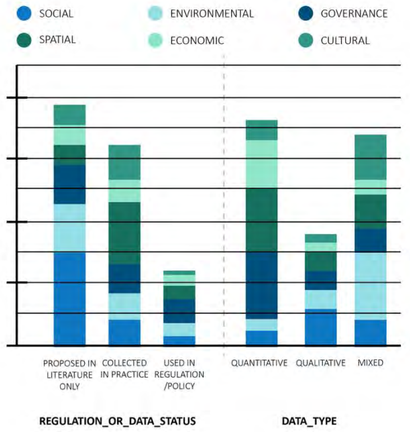
Characteristics

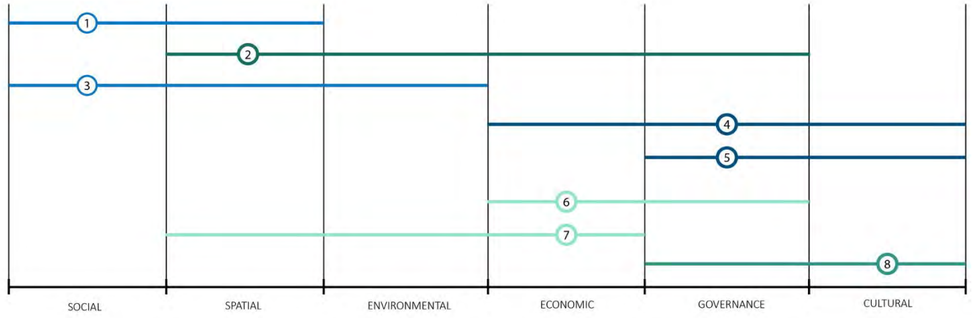
Geography
Size
Population
Infrastructure
Density
…

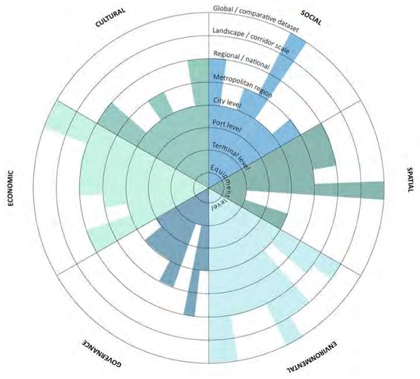


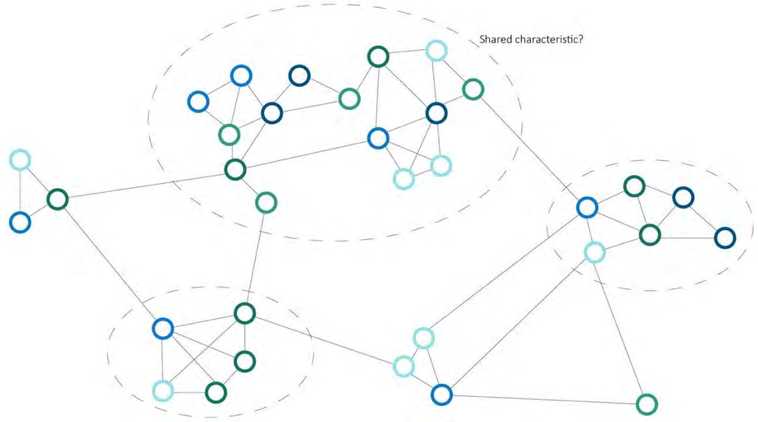
WG2 Library of Indicators for a Just Energy Transition in Port City Territories

WG2 Library of Indicators for a Just Energy Transition in Port City Territories

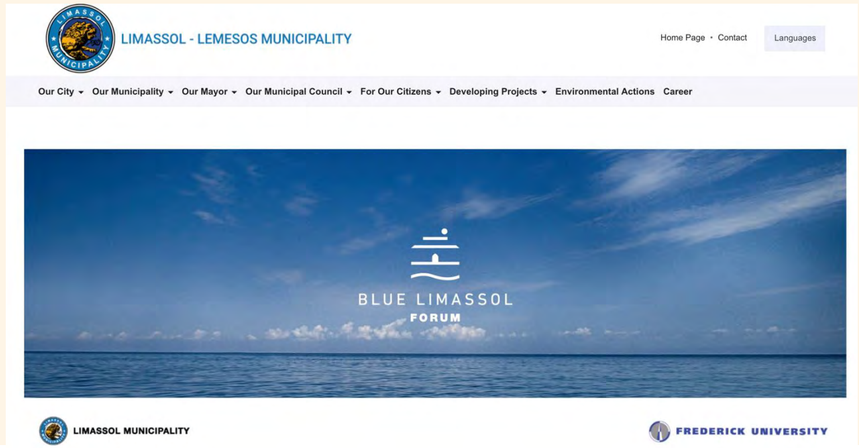








Established in 2020, the Blue Limassol Forum serves as a platform for dialogue on the sustainability of coastal cities, reflecting Limassol's strategic role as a leading maritime and coastal city in the Mediterranean.



Blue Limassol Forum

Webinar 2020 "Sustainable Coastal, Marine & Maritime Environment"

The signing of the LIMASSOL DECLARATION on October 8, 2012, was a historic event for Limassol and a milestone for the development of the EU Integrated Maritime Policy. At the same time, the Declaration became a defining force in the development of EU's 'Blue Economy' strategy. The choice to have the signing of this declaration in Limassol, was an acknowledgement of the importance of the sea for Limassol, of how it has shaped the history of Cyprus and how it influences the present and the future of Limassol and Cyprus as a whole.

Today Limassol is facing great challenges, ranging from the ecological protection of the sea, coastal and waterfront areas, achieving sustainable growth by taking advantage of the potential of our seas and coasts, and more specifically of ensuring a dynamic marine and maritime agenda for growth, competitiveness, and job creation. These challenges are the essence of a blue economy, and the primary targets of the policies of a Blue Limassol.

The Limassol Municipality, in a strategic collaboration with Frederick University Department of Maritime Transport & Commerce have founded The Blue Limassol Forum. This is a broad-base platform in which all stake holders have a place and a floor to speak: Maritime professionals, environmentalists, port authorities, academics, students. Above all, this Forum is for the citizens of our society at large, who are the main and principal stake holders of any present and future developments concerning Limassol.

As an annual online event conducted in May 2020, this year's Forum topic was "Sustainable Coastal, Marine & Maritime Environment". The deliberations of the Forum can be viewed through the links below.

Most importantly, this Forum gives voice to each and every citizen; offering the opportunity to speak out and express an opinion relating to our environment, our sea, our coasts, our maritime industry, our infrastructure and other issues pertaining to Limassol's character as a leading port-city in the region, a maritime hub and a blue city.

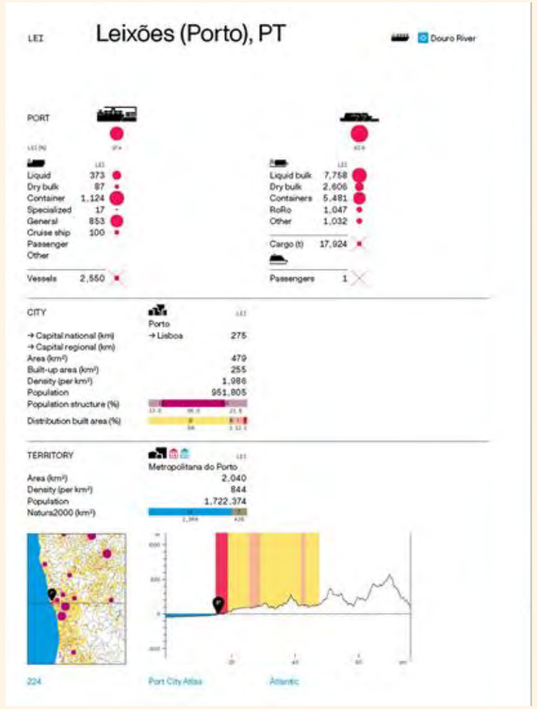
The survey conducted as part of the Blue Limassol Forum 2020 has identified the areas where citizens have the most concerns. We are now developing a plan of studies to collect facts and statistics to cross check and determine if the matter is one of perception or reality. The dialogue remains open so that priorities, decisions and actions are driven by an informed and transparent process.

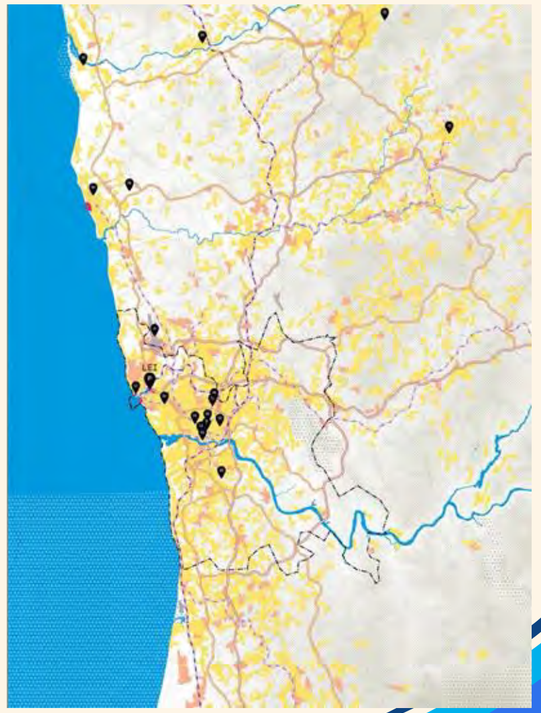
Conflict resolution

Method: Value Case Approach

- Workshops and desk research to identify conflicts of port transformation and their impact on nearby communities and territories
- Identifying conflicts through hands-on tools







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Thank You

https://maritime-forum.ec.europa.eu/theme/governance/european-maritime-day-my-country_en

Carola Hein; c.m.hein@tudelft.nl

