



The International Maritime Transport and Logistics Conference

“MARLOG 12”

**Sustainable & Innovative
Technologies**

Towards a Resilient Future

12 - 14 March, 2023 Alexandria - EGYPT





Philippe GUILLAUMET Port of Marseille Fos Authority

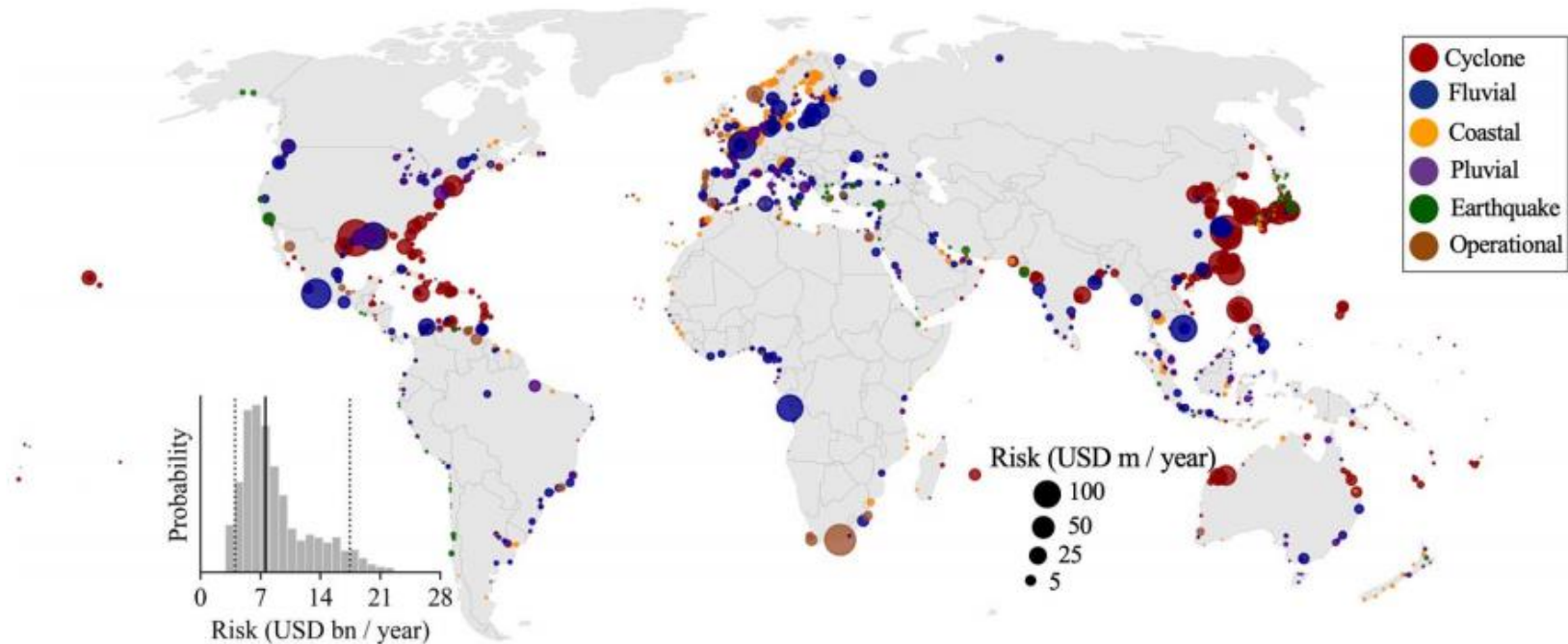
RESILIENCE IN PORT SUPPLY CHAINS



RESILIENCE IN PORT SUPPLY CHAINS for WHO?

Multi-hazard risk to global port infrastructure and resulting trade and logistics losses

Verschuur, J., Koks, E.E., Li, S. *et al.* Multi-hazard risk to global port infrastructure and resulting trade and logistics losses. *Commun Earth Environ* 4, 5 (2023). <https://doi.org/10.1038/s43247-022-00656-7>



RESILIENCE IN PORT SUPPLY CHAINS

“A port is a geographical area where ships are brought alongside land to load and discharge cargo - usually a sheltered deep water area such as a bay or river mouth – and often comprise multiple terminals devoted to a particular type of cargo handling” (Stopford, 2009).

So far So good

THE PORT AS A STRATEGIC NODE OF A WIDER NETWORK

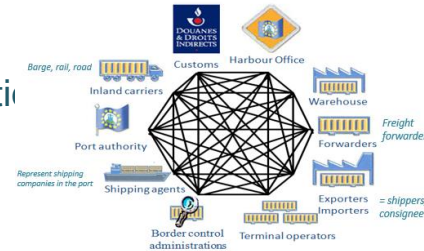
A Port is a land area with maritime and hinterland access that has developed into a logistics and industrial centre, playing an important role in global industrial and logistics networks (T. E. Notteboom, 2001)



Ports are elements in value driven chain systems (R. Robinson, 2002)

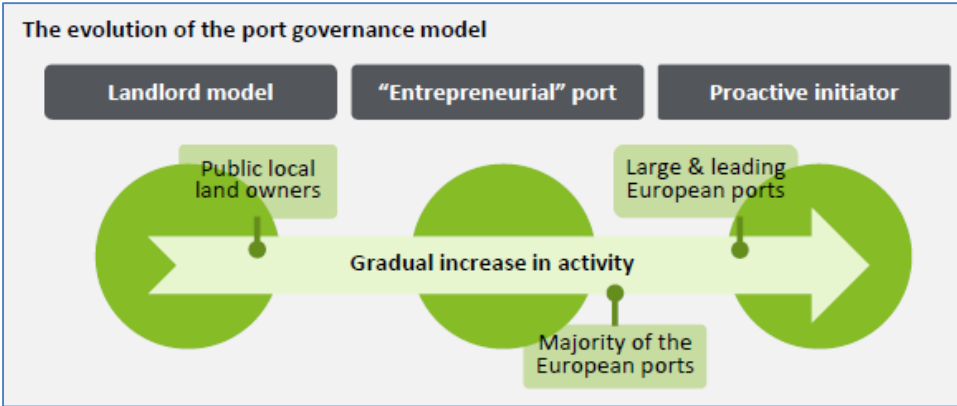
Ports are part of trade channels, supply channels and logistics channels at the same time (K. Bichou and R. Gray, 2005)

The port is a collection of a diverse set of economic activities (P. W. De Langen, 2004)



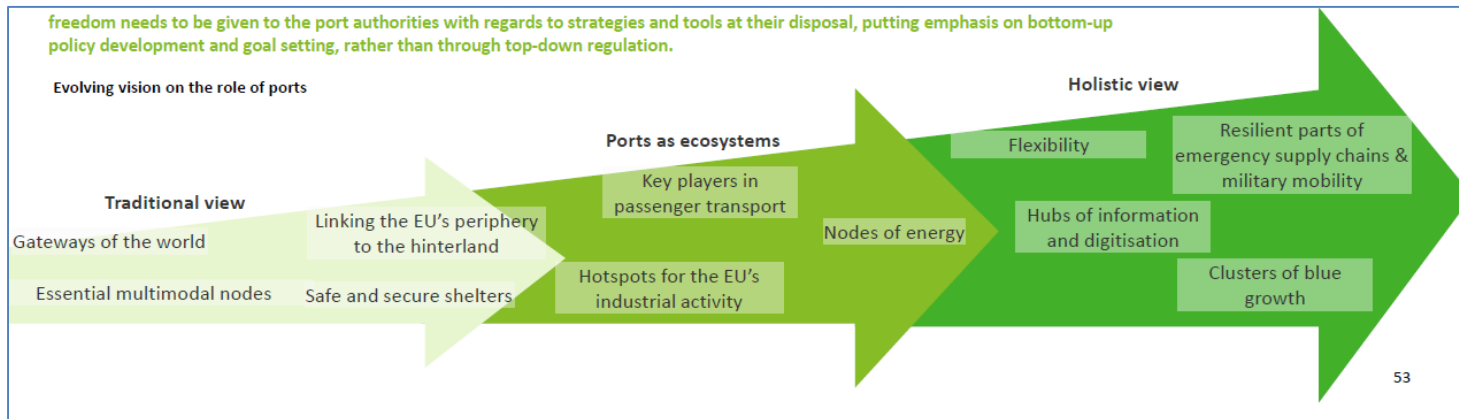
Port strategies for resilience totally included in the new vision and evolution of ports

The evolution of the port governance model



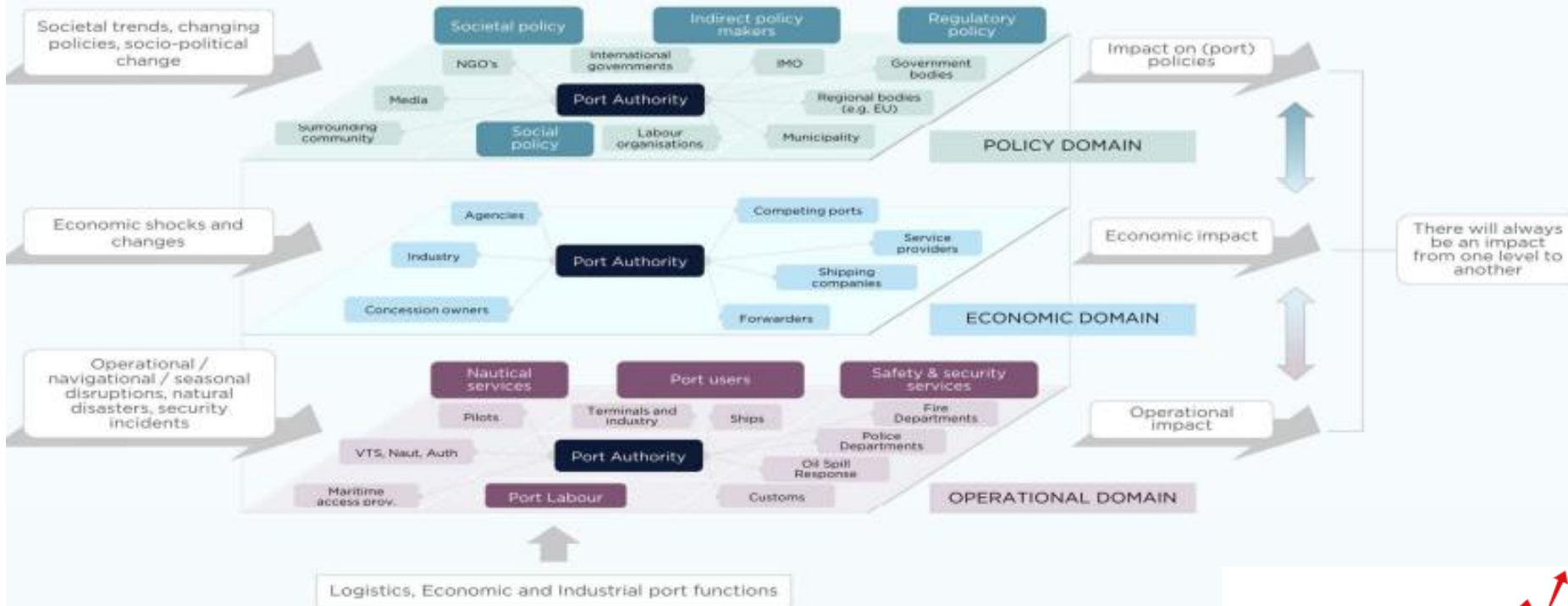
freedom needs to be given to the port authorities with regards to strategies and tools at their disposal, putting emphasis on bottom-up policy development and goal setting, rather than through top-down regulation.

Evolving vision on the role of ports



Resilience in Ports need a holistic approach

DEVELOPMENT OF AN ORGANISATIONAL RESILIENCE MODEL FOR PORTS



1.5. Port Disruption Main Types & Impact Ratio

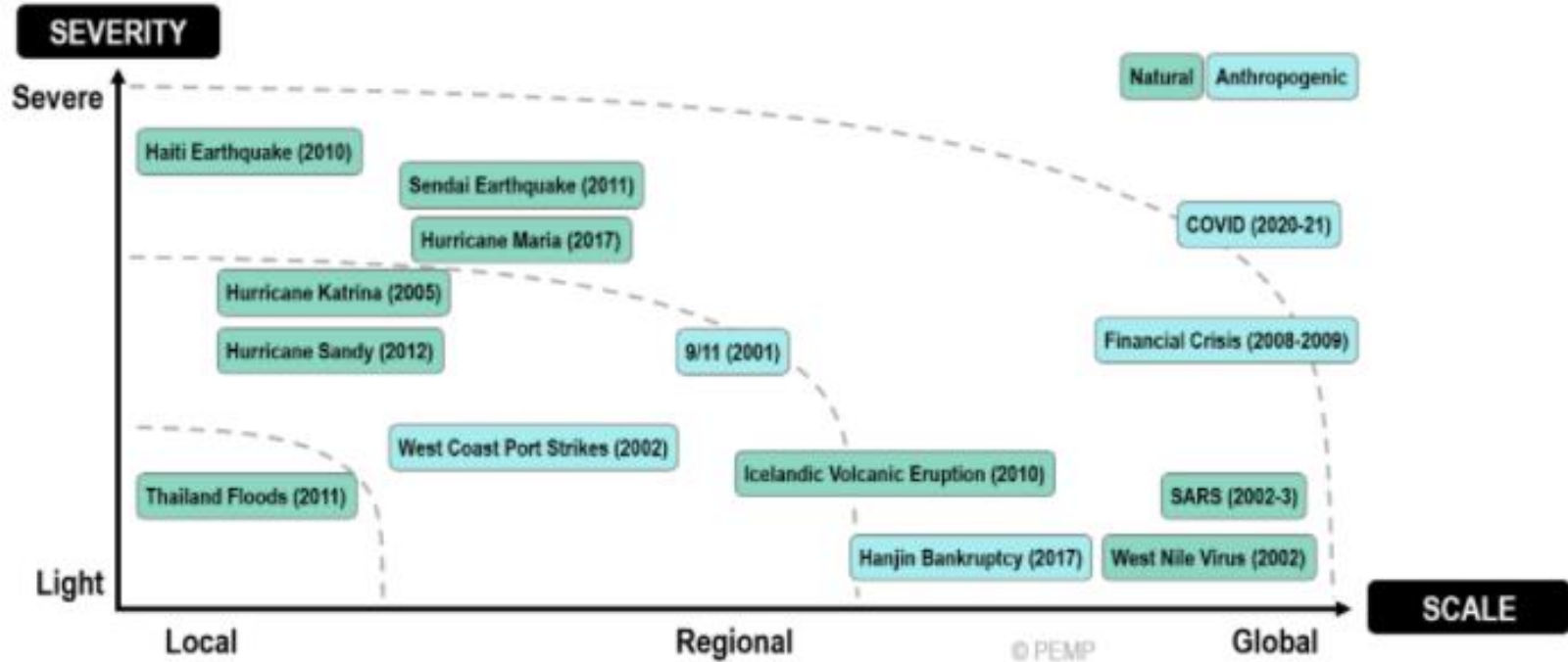
		<u>Impact Ratio</u>
	Geophysical and Climate disruptions Earth Quakes, Hurricanes, Tsunami, Volcanos	Up to 80% Productivity
	Operational Accidents Mostly affect infrastructure (Berth, Equipment, other Port Logistics)	Up to 100% Productivity
	Labor Disruptions Labor disqualification , Labor disputes	Up to 80% Productivity
	Economic and geopolitical events Wars (Russia-Ukraine) – Natural Resources defiance	Up to 60% Productivity
	Information technologies Cyber attacks, Data Base Disruptions,	Up to 65% Productivity
	Pandemics Covid19	Up to 65% Productivity

Resilience in Ports & Quality of Infrastructure



From a transportation and port perspective, resilience allows **reducing the probability of disruption**, and if it occurs, a port will have the ability to **mitigate its impacts**. Therefore, the following definition is used:

A **resilient port** (or infrastructure) can cope with shocks, absorb disruptions, quickly recover, and restore operations to a level similar to or even above a baseline and adapt to changing conditions while continuing to develop and transform..



Main Natural and Anthropogenic Supply Chains Disruptions in the 21st Century



LIQUID BULK
45,3 MT (41 IN 2020)



SOLID BULK
11,4 MT (10MT IN 2020)



GENERAL CARGO
20,5 MT (18,3 IN
2020)



IN WHICH CONTAINERS
1,5 M TEUS (VS 1,2 IN 2020)

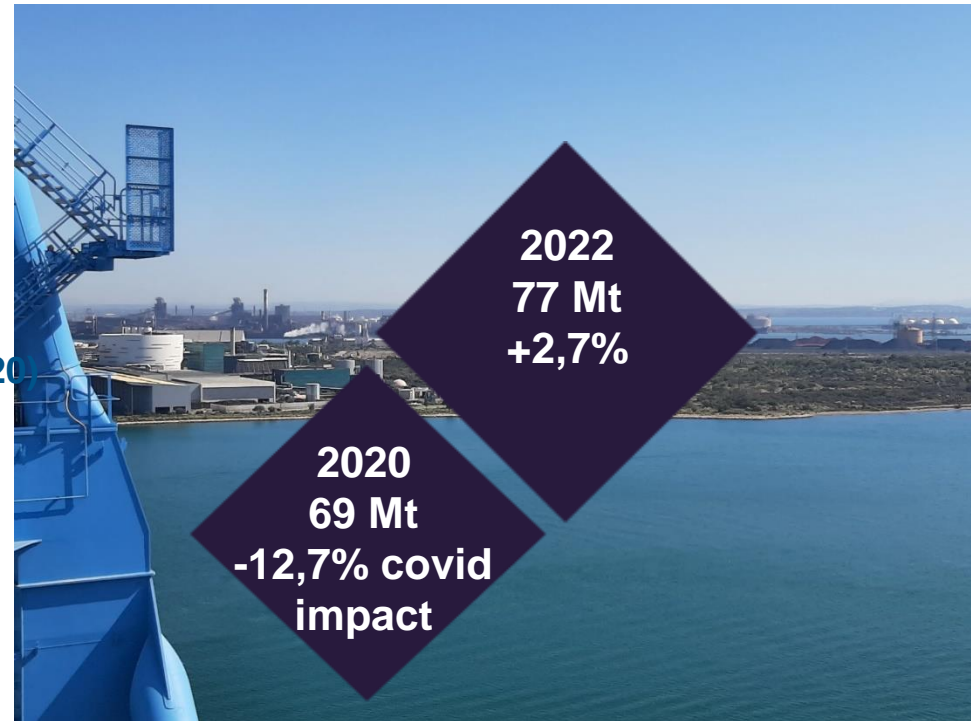


IN WHICH RO-RO
240 000 TRAILERS
(210 000 IN 2020)



**PASSAGERS CRUISE &
FERRIES**
3MPAX (1 MPAX IN 2020)

Global traffic



MARSEILLE FOS : A GLOBAL GREEN PORT DEDICATED TO BLUE ECONOMY



Performance

Connectivity,
Accessibility,
Fluidity, Modal
Shift



Sustainability

Reducing port
activities impact
on environment,

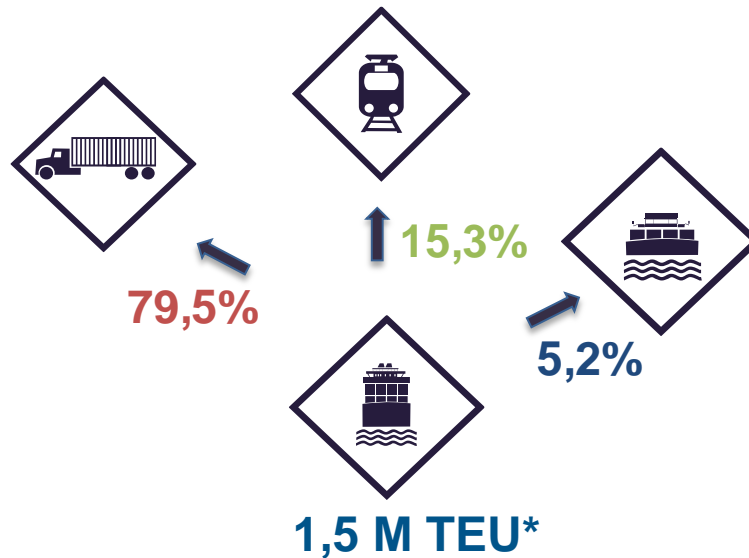


Innovation

Alternative
fuels, Projects,
Smart Port,
Digital
Community



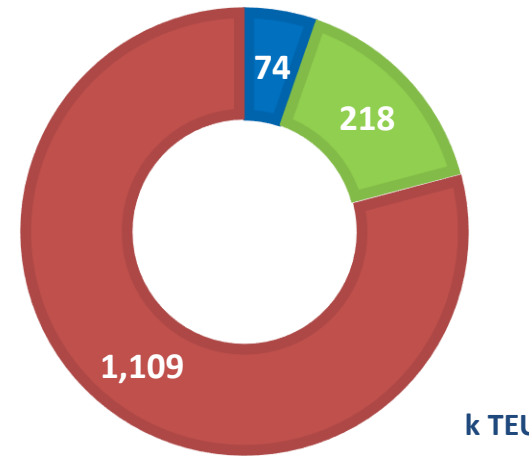
PORT OF MARSEILLE FOS – ECONOMIC TRANSITION



Modal shares TEU 2021

Historical Record!

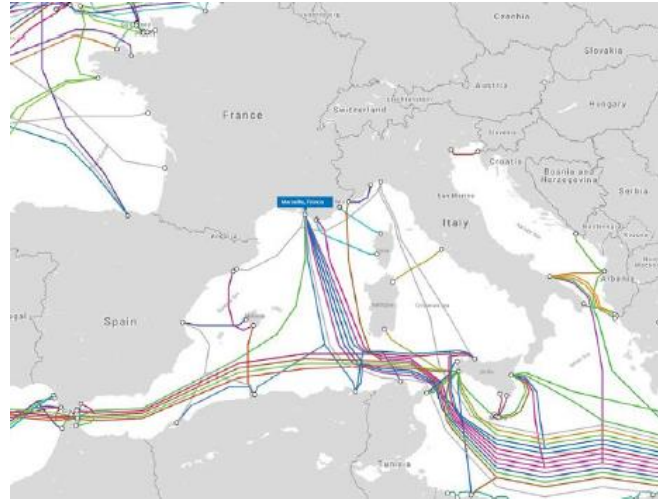
■ River TEUs ■ Railway TEU



PORT OF MARSEILLE FOS – ECONOMIC TRANSITION



PORT OF MARSEILLE FOS – DIGITAL TRANSITION



- 160 RÉSEAUX•
- 15 CABLES•
- 6 ECHANGEURS INTERNET•
- 43 PAYS RELIES•
- 12 CDNS DE CONTENU•
- 5 CONTINENTS•

MARSEILLE IS A STRATEGIC POSITION FOR THE CONNECTION BETWEEN EUROPE AND THE REST OF THE WORLD, ESPECIALLY ASIA, THE MIDDLE EAST AND AFRICA

L'écosystème DES CABLES SOUS-MARINS A •
MARSEILLE

PORT OF MARSEILLE FOS – DIGITAL TRANSITION



4 strategic ambitions :

To improve the economic and environmental performance of the port and logistics and industrial ecosystem

To create new sources of value and employment in particular in the digital sector

To Strengthen the relations and interactions between the Port and the metropolitan territory

To promote the port and contribute in the Mediterranean Translated with www.DeepL.com/Translator (free version)

PORT OF MARSEILLE FOS – GREEN TRANSITION

4 PILLARS

1. Contribute to the decarbonation of the uses (shipping, industrial sector, mobility,...)

Cold ironing (Huge development in progresse ; Well developed on the RoRo Corsica Market ; target 90%
LNG bunkering (40 calls in 2019, 80 in 2021)

2. Stimulating/supporting the production of today's and tomorrow's green energy

- Photovoltaic
- Wind power (capacity installed 31 MW (one shore) ; potential for offshore in med : 1,2 Giga Watt
- Geothermal energy (capacity installed : 82 MW ; Potential : 150 MW)
- Green Hydrogen (potential : 600 MW)
- Fatal heat
- Bio fuel

3. Structuring and encouraging the circular economy and innovation

- CO2 network, Steam network, Hydrogen network
- Other innovations

4. Decarbonizing hinterland flows to have an impact on the entire supply chain

Investments in barge and rail infrastructures, Gas and hydrogen distribution to trucks (barges and trains in project, partnerships with inland ports....

Cold ironing

Huge development in progress

e.g. : Well developed on the RoRo Corsica Market ; target
90%



LNG bunkering

Huge development in progress

40 calls in 2019, 80 in 2021
Bunkering « ship-to-ship » and « truck-to-ship »



Role of the port authority: protecting trade between land and sea²

Attack possibilities: sea, land and cyber

Protection of maritime access

- Vessel Traffic Service- VTS
- Control of the dangerous goods
 - Harbour Master
 - Coast Guard



Protection of land access

- Physical access control
- Video surveillance
 - Port Security
 - Police, Customs, Border Police



Protection of computer access

- Organisational and technical measures enacted by ANSSI (NSA France)
- Good Agent Practices
 - Chief Information Security Officer
 - Computer and information services



PORT OF MARSEILLE FOS – NEVER ALONE

« To built the relationship with the inhabitants »

Open layout projects

J1 / LA PASSERELLE



GRAND ESTAQUE



PHARE / J0



J4 / CRUISE TERMINAL



PORT OF MARSEILLE FOS – NEVER ALONE

Meeting opportunities to create a Port center

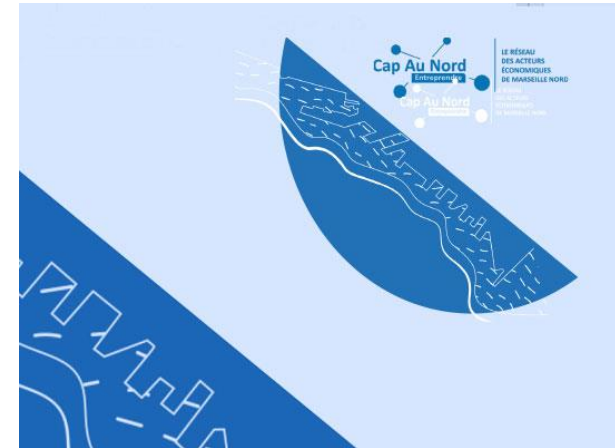
OPEN DAYS



HISTORIC VISITS



YOUTH FROM SENSITIVE
NEIGHBOURHOODS EMPLOYMENT



Conclusive remarks

Resilience in port supply chains is a global challenge

The question of the financing is essential,

Cooperation between Ports is a part of the solution,

Training is at the heart of our new resilience

Thank You
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PAST DRIVERS OF GLOBAL TRADE

1990-2015
Population growth
Increasing number of consumers
Offshoring of production
Lengthening supply chains
Urbanisation
Fossil fuel-driven growth
Trade-intensive growth

FUTURE DRIVERS OF GLOBAL TRADE

2016-2040
Population growth
Ageing consumers and changing consumer behaviour
Reshoring of production
Shortening supply chains
Urbanisation without jobs creates slums
Renewable energy-driven growth
Reduced trade potential

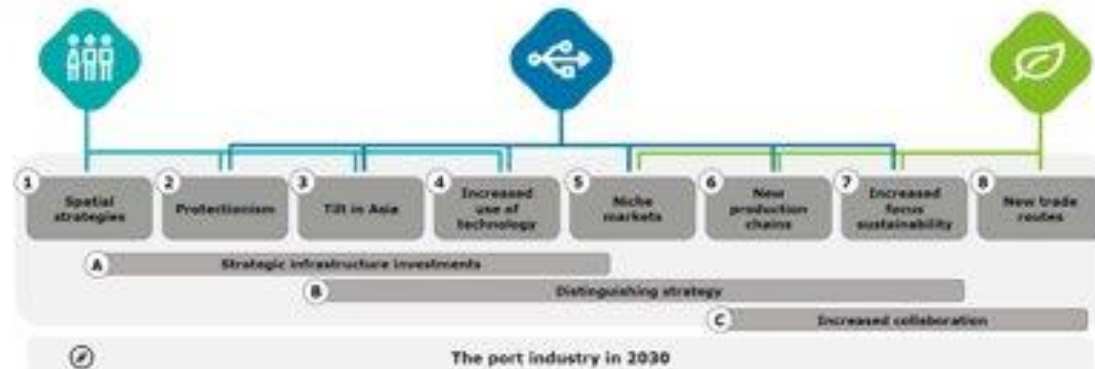
Demographic drivers



Technological drivers



Sustainability drivers



- **Photovoltaic**
 - Capacity installed : 82 MW
 - Potential : 135 MW

- **Wind farms**
 - Capacity installed : 31 MW
 - Potential : 782 MW

- **Green hydrogen**
 - Potential : > 600 MW
 - → [Hub strategy](#)

- **Recovery of waste heat**
 - [Potential](#) : > 100 MW

- **Geothermy**
 - Capacity : 50 MW
 - [Potential](#) : > 5 MW

- **Biofuel**
 - → research and projects in progress

