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Sea-Change in Mediterranean Transport & Shipping
waves of container terminal concessions in MED region
Outlook on Port Container Terminal Development
connectivity, environment & financing (27th of June 2019)

- Port Economics & Business- Policy, Governance and Strategy
- Mediterranean **Maritime Supply Chains**
- **Container Terminal Concessions** in the Mediterranean Region
  Outlook on Port **Container Terminal Development**
- How **economic growth** translates into container traffic
- Mediterranean's Maritime **Infrastructures & Industrial Acceleration** - Successes
- **Qualified Human Capital** - Towards a Competitive & **Resource Efficient Transport System** – inclusiveness & training in Med. Ports

*While **Northern EU** box ports suffers from growth, the **Mediterranean** stays alive*

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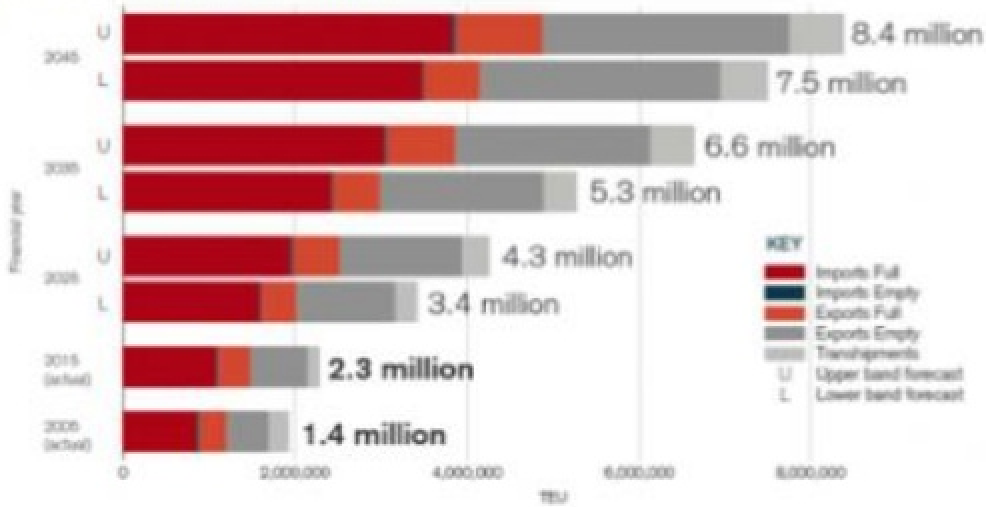
Containers are forecast to triple over next 30 years

Containers are forecast to grow in NSW from 2.4 million TEU now to between 7.5 million and 8.4 million TEU per year by 2045.

The key drivers of NSW container growth:

- domestic demand
- population growth
- strength of the NSW economy
- value of the Australian dollar
- levels of domestic manufacturing
- government trade policies
- location of key distribution centres

42% of all items in a NSW household come through Port Botany
(BIS Oxford Economics)



Port Connectivity & Efficiency

- Ports play key role in transportation system
- Ports provide access to global value chains
- Ports act on behalf of exporters / importers

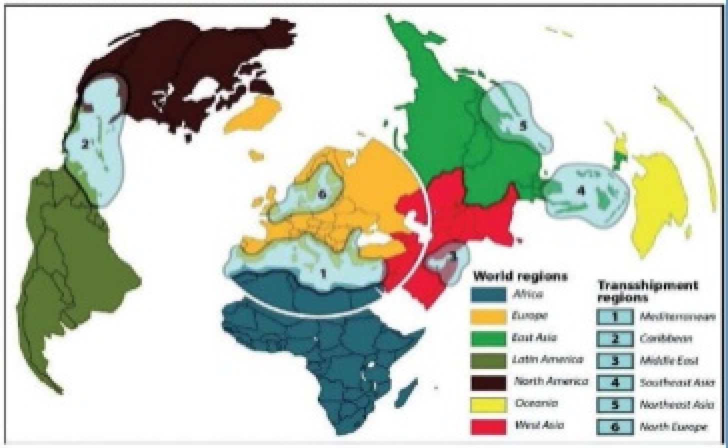
Growth of international trade, delocalisation and fragmentation of production result in **growing importance of global value chains**
Increasingly fragmented systems require **connected (glocal) cost-efficient transportation systems** to unite the different stages of production, enabling amassed **markets, market shares – faster & more efficiently**.
Multiple factors affect the choice of a port: carriers, logistics providers & shippers choose competitive ports:

- Proximity of production & consumption
- Hinterland connectivity & geographical location
- Maritime connectivity & nautical accessibility
- Port infrastructures and status of the port area
- Operational efficiencies & speed of handling
- Quality of port services, Pricing & cost

ValenciaPort LSCI (Port Connectivity Index by LinePort of the Fundación ValenciaPort)

PUERTO ORIGEN	ICP 1er Semestre 2016	ICP 2ndo Semestre 2016	ICP 1er Semestre 2017	ICP 2ndo Semestre 2017	ICP 1er Semestre 2018	ICP 2ndo Semestre 2018
VALENCIAPORT	100.00	95.47	98.89	102.19	102.12	97.31
ALGECIRAS	75.26	78.44	87.64	88.75	85.86	83.85
BARCELONA	76.91	73.20	84.03	84.94	89.42	83.57
LAS PALMAS DE GRAN CANARIA	26.42	26.89	26.94	27.98	29.54	29.55
CASTELLÓN	26.63	24.10	31.88	28.37	29.55	29.45
VIGO	18.74	16.70	15.78	18.43	19.65	20.48
BILBAO	23.67	16.86	18.44	18.75	20.15	18.96
MALAGA	- -	-	-	2.04	8.22	17.81
GIJÓN	12.82	6.15	9.15	9.24	11.91	12.87
TARRAGONA	12.38	13.40	15.71	14.95	11.33	11.58

Mediterranean and other transshipment regions



Improvement of competitiveness** is basic to the **positioning of ports in the value chains

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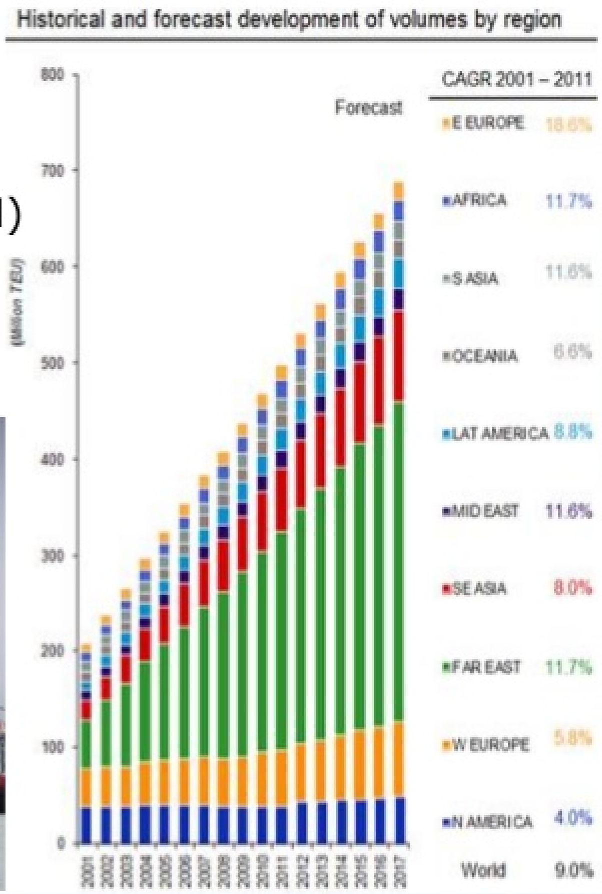
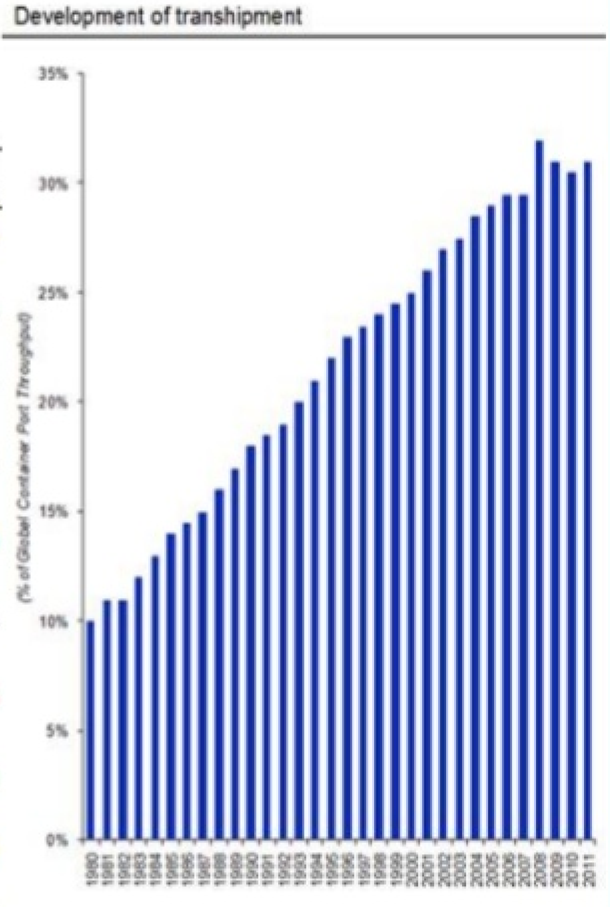
Main Players in the Container Port Terminals

- DP World
- PSA
- APM (Maersk)
- CMA-CGM (+ CEVA Logistics)
- TIL/MSC Terminals
- COSCO
- Yilport (also invests in CMA-CGM)
- ICTSI
- Global Ports Holding
- Hutchison Port Holdings, …





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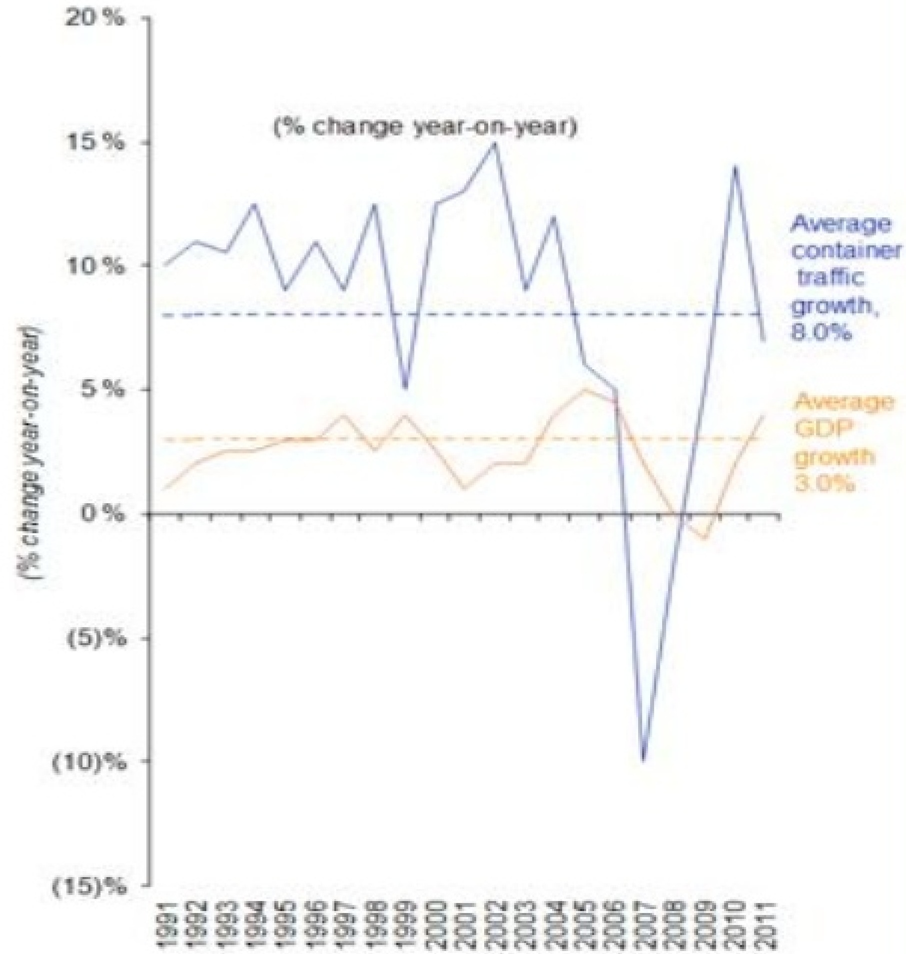
Key Container Terminal Market Characteristics

- Container terminals: **interface** between container **shipping lines & markets**
- Terminals **manipulate** containers, **store and transfer** containers, serve **multimodal hinterland**
- Terminals are **relay points** in the **maritime networks**, transhipping containers on feeders, allowing shipping lines to increase **market coverage** and **reduce network costs**
- Terminals **income generation:** handling/storing containers for carriers
- **Container trade growth** has a strong correlation to **economic growth** and **regional/national GDP**



serving as best
indicator of prospective container volumes

Major Container Ports Productivity by IHS Markit

greatest improvement in Average Hours Port to Berth

Port	2017	2018	Reduction	Improvement (%)	Port	2017	2018	Reduction	Improvement (%)
Manila	8.70	2.98	5.72	65.8%	Valencia	4.02	3.22	0.80	19.9%
Santos	3.70	2.44	1.26	34.1%	Colombo	3.88	3.14	0.74	19.1%
Long Beach	3.81	2.92	0.89	23.3%	Rotterdam	5.67	4.63	1.04	18.3%

- **6 key performance metrics**
  - Port productivity ships >10K TEU
  - Average Hours Port to Berth
  - Average port time
  - Arrival berth to first move
  - Moves contribution by ship size
  - Moves per crane
- Data is provided by largest global and mic-sized shipping lines players **+160,000 port calls**/year and 464 container ports around the world, **67% global container capacity**

www.ihsmarkit.com/maritime_trade

Average Hours Port to Berth by Region

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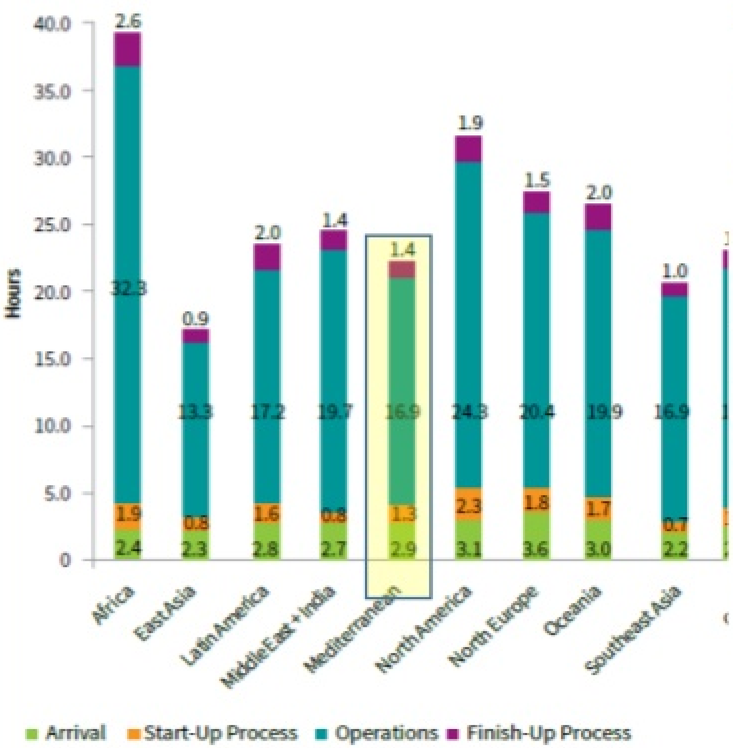
Major Container Ports Productivity by IHS Markit

Mediterranean area performs average – ahead of North EU, but behind Asia, ME, SE-Asia **– room for further improvement**

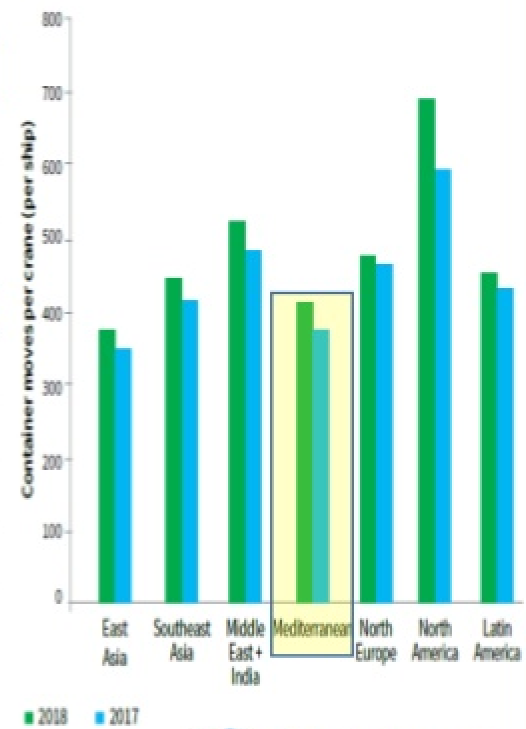
Average Port Time Overview in 2018



Arrival Berth to First Move Most Improved Ports in 2018

Port	2017	2018	Reduction	Improvement (%)
Port Said	1.42	0.81	0.61	43.1%
Tanjung Pelepas	0.73	0.46	0.27	37%
Salalah	0.65	0.41	0.24	36.9%
Valencia	2.14	1.46	0.68	31.8%
Callao	2.30	1.65	0.65	28.3%
Cristobal	2.43	1.82	0.61	25.1%
Singapore	0.78	0.61	0.17	21.8%
Guayaquil	2.61	2.05	0.56	21.4%
Jawaharlal Nehru	0.98	0.77	0.21	21.4%

Moves per Crane Development 2018 V. 2017



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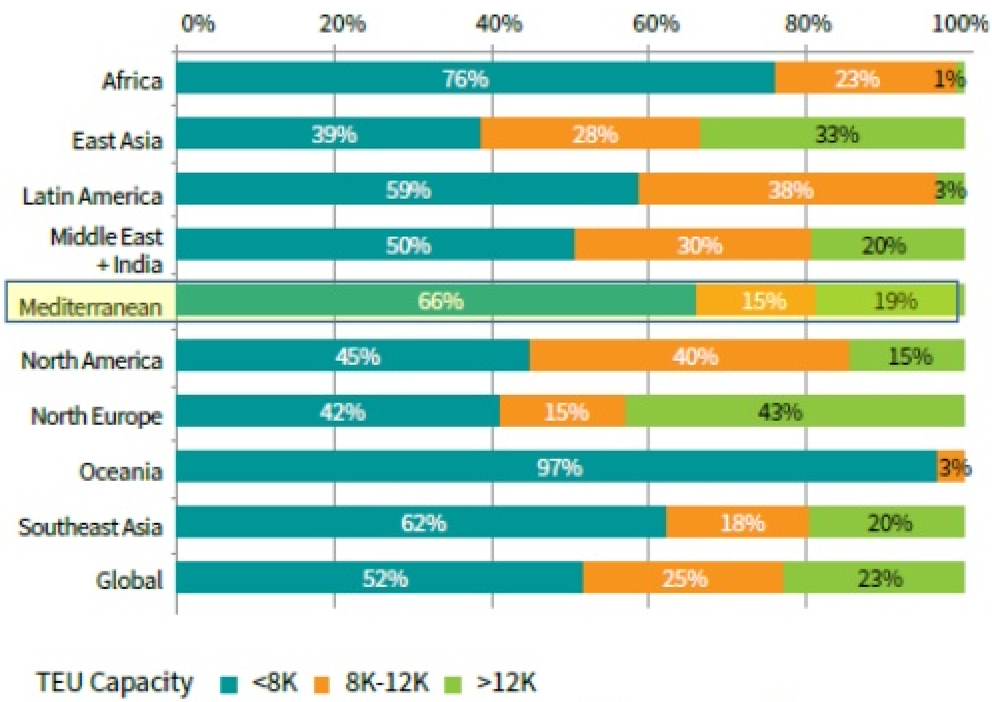
Major Container Ports Productivity by IHS Markit

Mediterranean **slower** on moves per crane development receiving **more <8K TEU - less calls of larger-sized ships**

Moves Contribution by Ship Size in 2018



Port Productivity Development: 2017 V. 2018

www.ihsmarkit.com/maritime_trade

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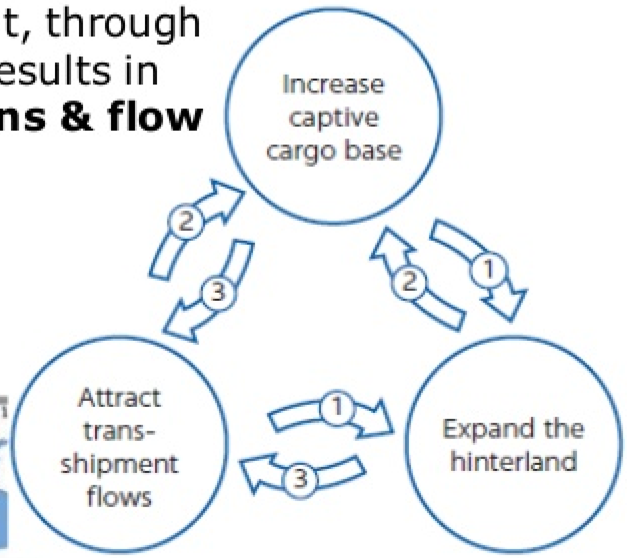
Mediterranean Maritime Strategies

Mediterranean markets and its associated shipping and port activities

"***Port Efficiency and Hinterland connectivity in the Mediterranean Maritime Networks***" a study by **WorldBank** (2017): strong and collaborative private-sector participation drives:

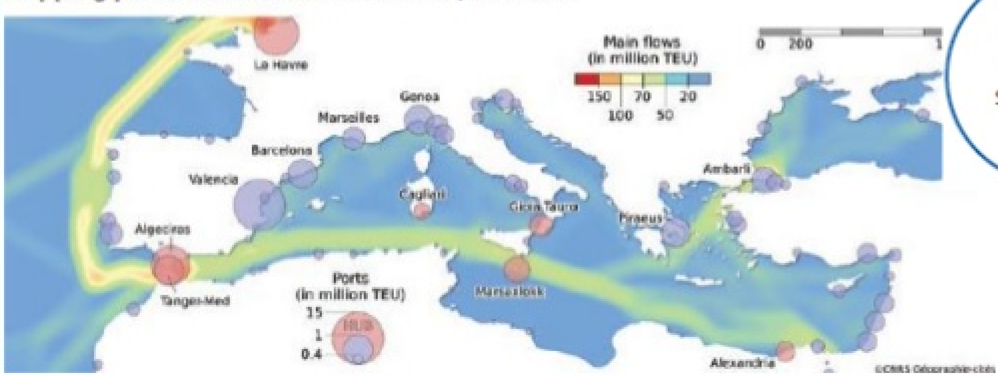
economic growth = *container traffic increase* + new capacity and greenfield development, through private and public sector collaboration, results in

- **effective optimization in operations & flow**
- **infrastructure investments**
- **terminal capacity increase**



1. **Hinterland expands,** with more maritime connectivity, from transshipment activity and/or when inland destination benefits from the economies of scale of a strong captive cargo base.
2. **Captive cargo increases** as better maritime and hinterland connectivity expand the market potential of logistics and production activity in the port vicinity.
3. **Transshipment develops** as hinterland and/or captive cargo activities expand because the port becomes more attractive to call at for shipping lines.

Shipping patterns in the Mediterranean, 2009–16



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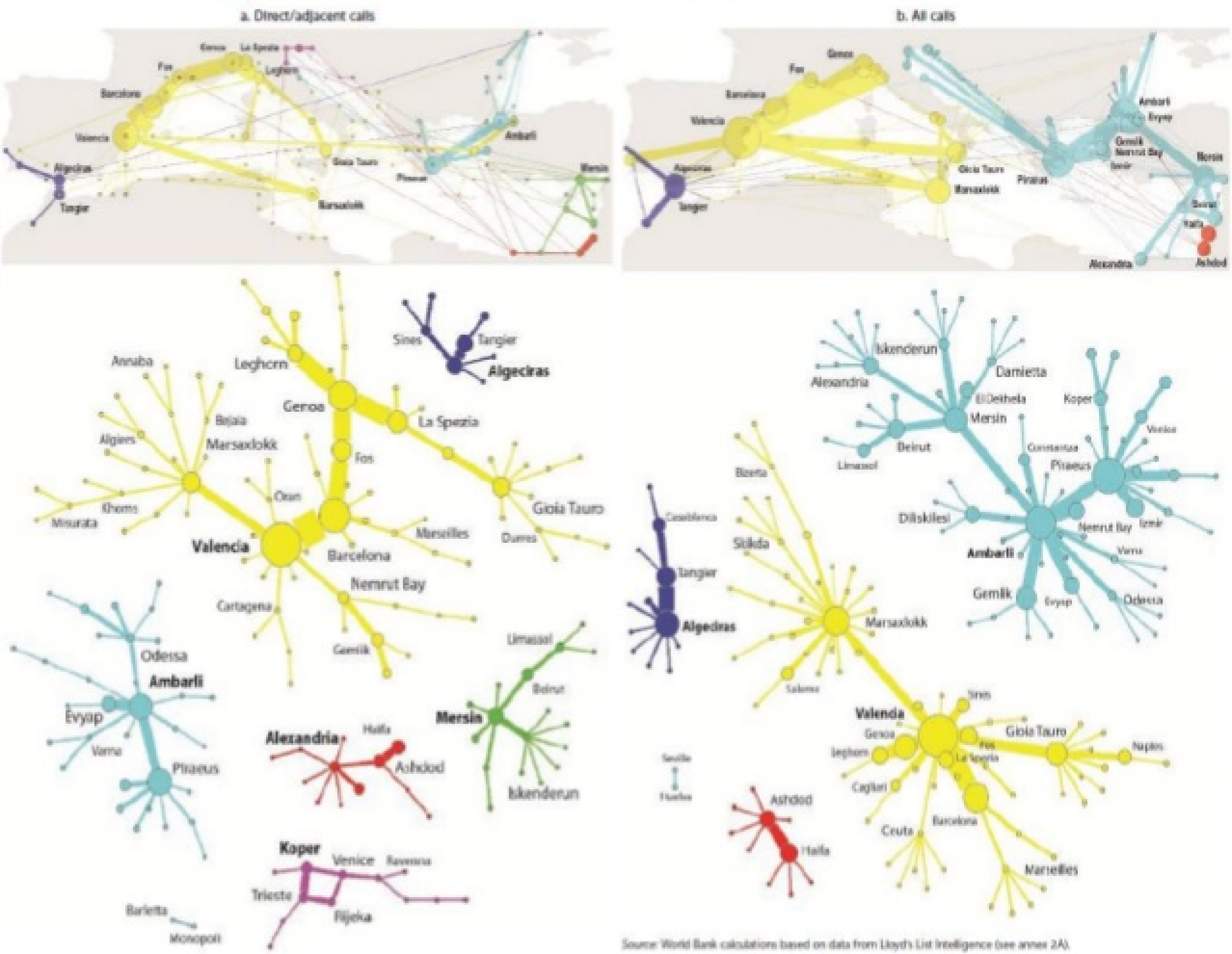
Mediterranean Maritime Networks

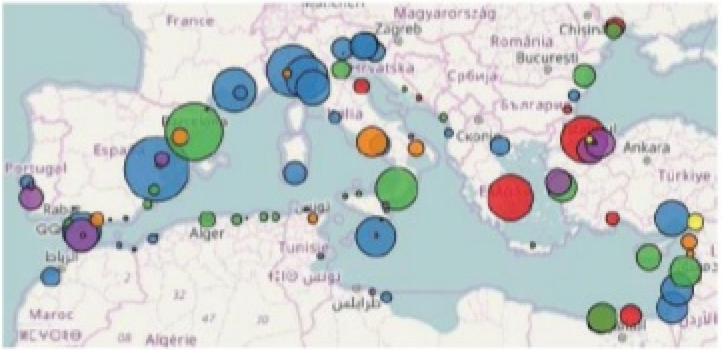
Subnetworks in the Mediterranean, 2015



Source: World Bank calculations based on data from Lloyd's List Intelligence (see annex 2A).

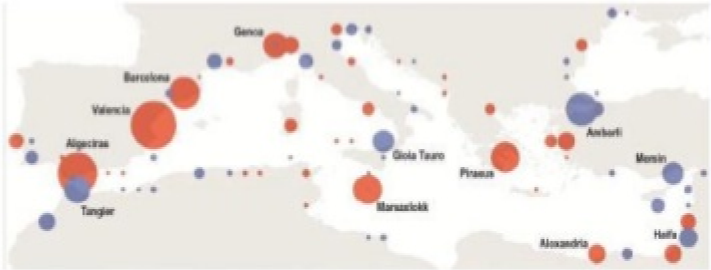
The combination of import/export and transhipment and hinterland connectivity creates **port clusters** with direct and adjacent liner calls

Six port clusters grouped according to traffic trajectory



Source: World Bank calculations based on data from Lloyd's List Intelligence (see annex 2A).

Average vessel turnaround time versus number of vessel calls in the Mediterranean, 2009–16



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Mediterranean Hinterland Connectivity

nland nodes served by Marseilles port, 2016

Indicators of good approach:
Corridor Governance Structure and **Performance Monitoring** along international corridors from port to the hinterland

Tanger Med is two ports in one

Barcelona's hinterland network, 2010

In the EU the concept of core corridors to connect all EU countries is a cornerstone of the EU transport policy
– the TEN-t Core Network –
(INEA – MoS – PoF Network)

MED region is both ***a trading area and a transit area*** linking Europe & North Africa with the rest of the world through the **hinterland connectivity** and the **hub-and-spoke structure of maritime networks**.

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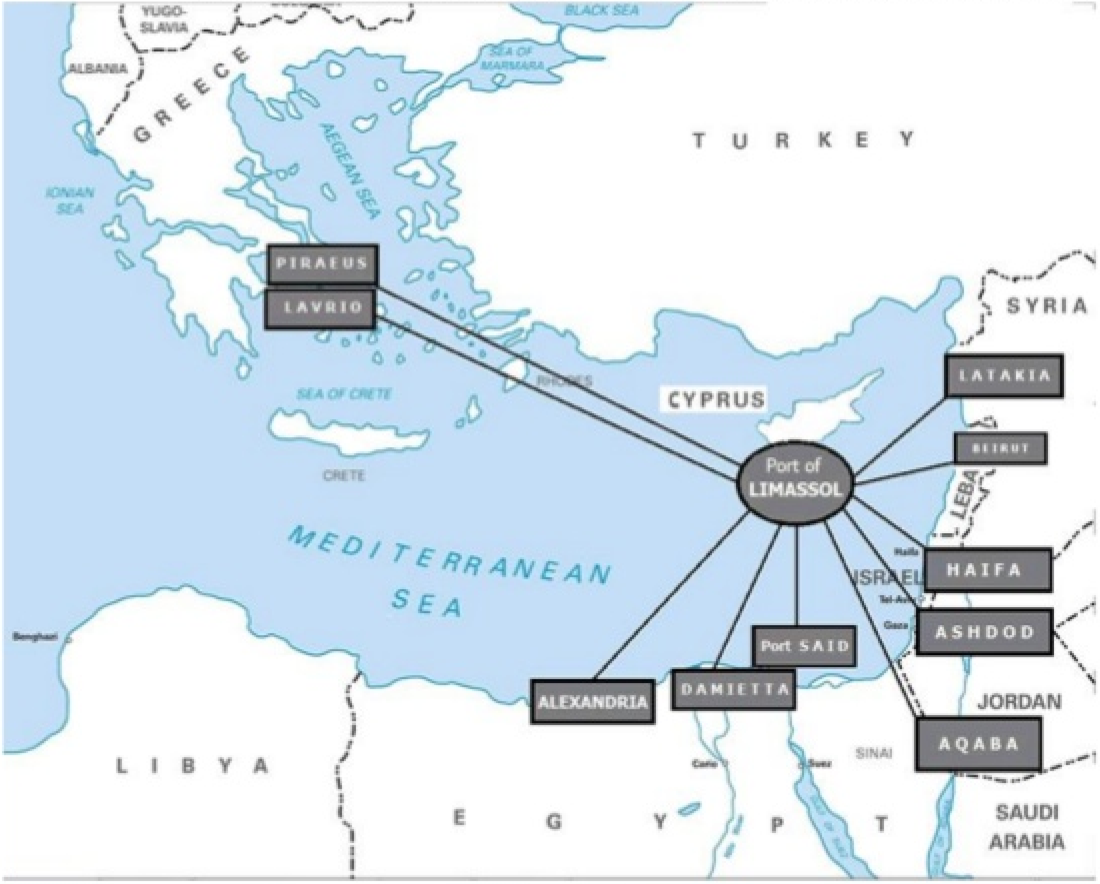
Mediterranean Short Sea Shipping

Short Sea Shipping – Port of Limassol Cyprus

+ 90% of its seaborne transport is currently SSS

The geographical location of Cyprus encourages the use of its ports as transhipment hubs for SSS



data-sharing and eliminating supply chain bottlenecks to reduce time at ports improve Short Sea Shipping performance and efficiency

Key Connectivity Points

Connectivity

- Import / Export & Transhipment
- **Hinterland** Container Terminals
- **Multimodal**, Multipurpose and Multiproduct
- Multimodal **connectivity**: Road, Rail, IWW
- **Connectivity** with shipping lines, PCS and port portals AND among port terminals
- **BRI/OBOR** initiatives and the **EU TEN-t Corridor Network** development have impacts in Asia, Eur-Asia, ASEAN, Africa, Middle-East and across the Mediterranean region

*Only **supply chain actors** which go through the **digitalisation transformation** of* Industry 4.0 *or* Port 4.0 *and **connect + enable connection** will remain their **competitive advantage.** Over time, those that do **not adapt** will vanish from the **integrated connected supply and value chain** (*goods, data and financial flow*).*

Port Terminals need to be **SMART connected**

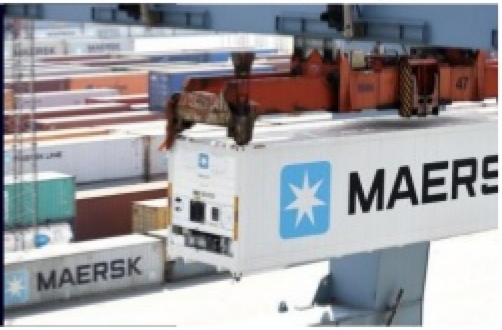
Key Technology Points

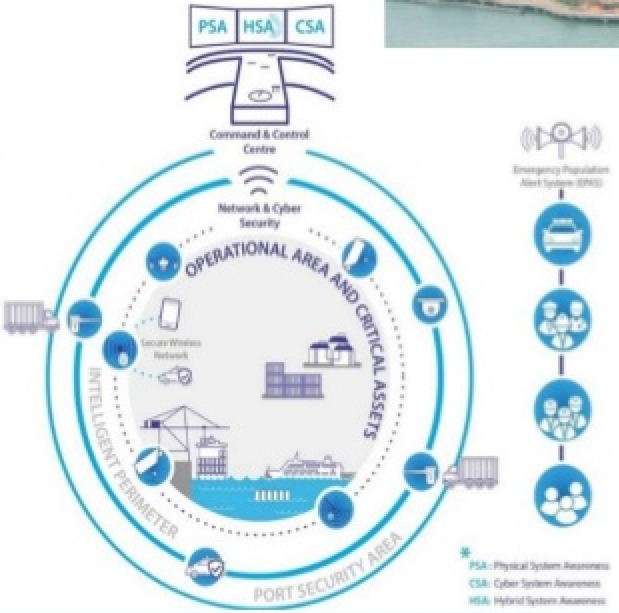
How to successfully fuse physical and digital infrastructure

WEF: $14.2 trillion new global wealth through 4IR by 2020

Time for industry members to join up and develop comprehensive innovation strategies

- **Cyber Security**: deal with existing and emerging criminal cyber-attacks.
- **Next wave of innovation in terminal operating system (TOS)** (e.g.: NAVIS)
- **Blockchain** (TradeLens, bolero.net)





- **EU SAURON project** asset management
- Automating **Predictive Maintenance**
- Improving **inventory efficiencies** and **shipment / cargo visibility**

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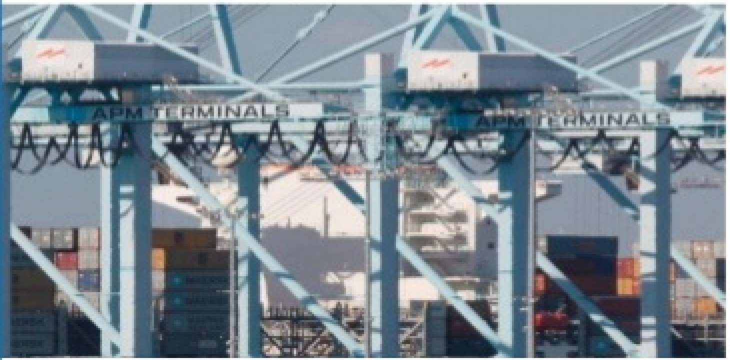
Key Technology Points

- **Fully automated terminals** towards ***autonomous*** vessels, machinery and vehicles, through extended use of 5G, IoT, AR/VR, AI, intelligent online containers
- **APM** to implement landside infrastructure to operate **electric-powered equipment**




move towards **SMART CONNECTED terminals**

Information & cargo flow go hand in hand, synchronized & securely optimized, improving quality & reducing overall supply chain cost for all stakeholders

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Key Environmental Points

- **LNG-powered container ships** require container port terminals to have LNG terminal in its vicinity
- **Green Terminal**: **ECO** machines, **ECO** ports, **ECO** terminals
- **Eco-efficiency** projects (e.g.: Valencia aims for **ZERO-emission**)
- extra costs arising from **low sulphur cap** may benefit Mediterranean ports on Asia-Europe trade

move towards **eco-friendly terminals**

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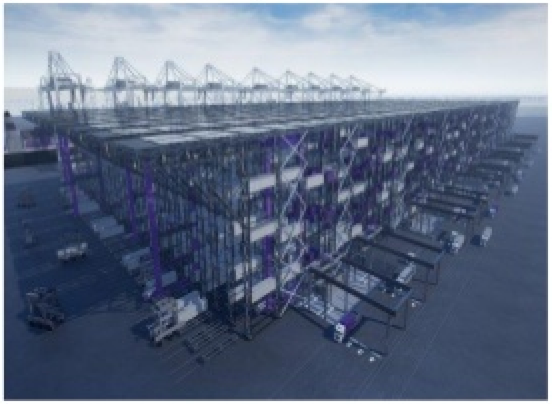
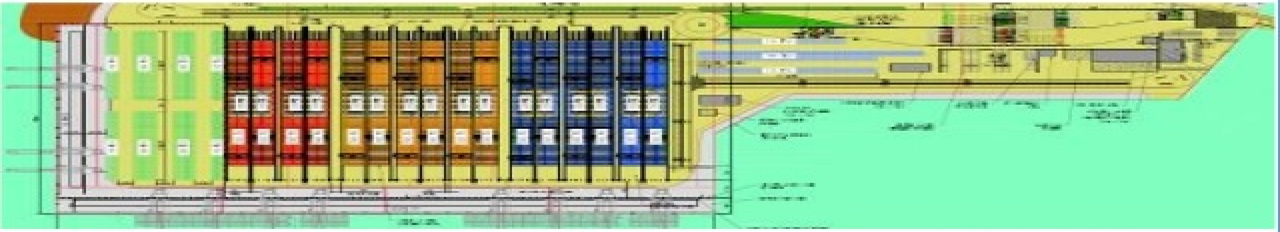
Key Infrastructure Points

- Adapting to **mega-AGE**: megaships and shipping industry consolidation, challenges for port and terminal operators, with acute concerns raised over **uneven distribution of benefits**, forcing continual port upgrades
- economies of scale in shipping creating **diseconomies in ports** and the onward land transport chain
- Port and connecting landside infrastructure development is vital to trade and nations
- **private & public investments**: impacted by shipping industry developments



- **Remove workflow bottlenecks, raise KPI performance + terminal optimization** (DP World)



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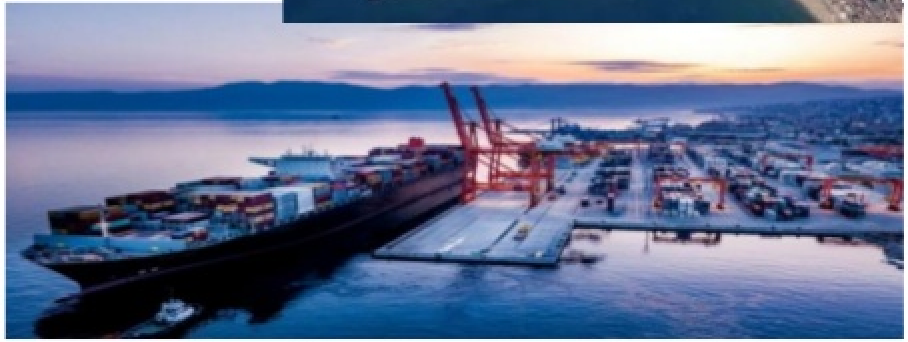
Sector growth & expansion

- **New port developments** (Nador, Morocco; Derince, Turkey)
- **Expansion of concessions** and **terminal upgrades**
  - Tanger, Morocco; Rijeka, Croatia (ICTSI)
- **New concessions**
  - Valencia: TIL/MSC – phased fully operational in 5 years by 2027: 3rd largest EU port, after Rotterdam and Antwerp
- **Take-over of concessions**
  - COSCO in Spain
  - YilPort in Italy and Portugal

extending their geographical and capacity reach

- **Divest** from Port Terminal Operations or **merge** with large 3/4PL (e.g.: CMA-CGM)
- Focus **from/to transhipment** (e.g.: MSC Valencia to move from transhipment to an open-box terminal)



While **Northern EU** box ports suffers from slower growth, the **Mediterranean** is in full swing

Future growth of ports will be limited!

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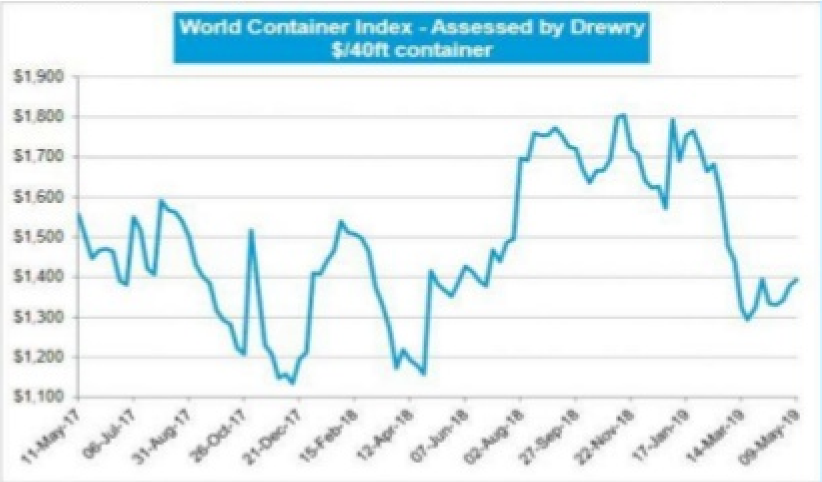
Key Financing Prompts

- **investors are taking a long-term view:** bankability built into the way concessions are structured
- **Poseidon Principles** for the shipping sector will influence the port terminal sector
- **Hard cash! Green and Sustainability Loan Market: b**anks give a discount on loan rate based on the sustainability score of your project (BNP Paribas Fortis, ...)
- **Financing risks remain in Africa**:
  - serious risk of debt distress
  - increased foreign-exchange
  - refinancing risks, partly driven
  - use of non-concessional financing
  - foreign-currency borrowings
- **Money remains very cheap**
- **Drewry Port & Terminal Insights** Comparative analysis of financial performance of 11 stock market listed terminal operators (key financial trends, review of M&A activity & valuations best/worst performer listed operators, insights & benchmarks for ports & port terminals, terminal capacity & performance quay-line benchmark, ship-to-shore benchmarks, yard benchmarks)



investing in **ports of tomorrow** is more than a catchphrase

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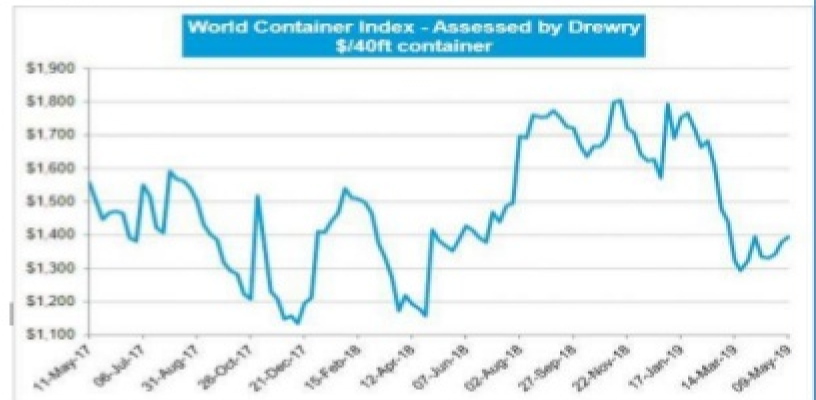
Key Influencers



- **BRI-OBOR** and **EU TEN-t Corridor Network** affecting port terminals: new, upgrade, expand and closures (even entire ports)
- Port Terminal concession expansion and new terminals in **Latin America**, **Suez** and **Africa** lead to **capacity increases in Mediterranean**
- Some realized through transhipment ports with new and expanding terminals in existing and new **off-shore ports**
- **Pressure** from Port Authorities / OGA's, port-city relations, IMO and bank's on shipping lines to **reduce ecological footprint** require port terminals to be in line and partner up
- Increased volumes in **Short Sea Shipping** and **Feeder** operators increase volumes at transhipment ports and terminals with **RORO facilities**

FUTURE of Port Terminals: better connected, more consolidation, off-shoring, global presence, greener

Value of Women in the Workplace

more women then ever before are active in business and running companies

- Providing strong expertise
- Improving company performance
- Driving economic growth
- Meeting market demands

58%
WOMEN-OWNED BUSINESSES (2007 -2018)

59%
WOMEN WITH MASTER'S DEGREE (2016 - 2017)

12.3M
BUSINESSES OWNED BY WOMEN (2018)

9.2M
EMPLOYEES OF WOMEN-OWNED BUSINESSES (2018)

$1.8T
SALES OF WOMEN-OWNED BUSINESSES (2018)

54% show improvements in **creativity, innovation, openness** and enhance their **company's reputation** from **gender inclusivity**

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Other Topics of Importance

- **Transforming terminals in MEGA-age** (e.g.: DP World Antwerp optimization of terminal through technology, infrastructure + starting to coordinate between terminals)
- **Multimodal platforms**
- **Regulations differ across EU countries**
- **Public** to **private PCS** and **port portals**
- **Tracking and tracing** of containers
- **Energy optimization** and **RE-mix**
- **SMART traffic + parking areas**
- **Industry consolidation**
- **Trade wars** and **political** to **worse conflicts**
- Identifying **opportunities, risks, vulnerabilities** and **regional trends**
- Utilizing port technology to **enhance supply chain risk management**
- **Collaboration & partnerships** among **key players prevent supply chain risk - rapid response to threats - impact on business success**

Port terminals connect distributed supply chains

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aiVP
The worldwide network of port cities

UN SDGs related to Port-City Relationships the AIVP Agenda 2030

Port-cities face **sustainable development challenges**

Port-cities are also the **best scenarios to test innovative solutions**

Need for an **holistic approach** to **sustainable development**

- **10 goals indicating the main challenges**
- **46 measures for action**

inspiring port and city actors to **act upon**
*and **maximize the investment & resources***

www.aivp.org

AIVP Agenda 2030: Connecting 10 Goals in Port-Cities to 17 UN SDG's

1 NO POVERTY	10 REDUCES INEQUALITIES
2 ZERO HUNGER	11 SUSTAINABLE CITIES AND COMMUNITIES
3 GOOD HEALTH AND WELL-BEING	12 RESPONSIBLE CONSUPTION AND PRODUCTION
4 QUALITY EDUCATION	13 CLIMATE ACTION
5 GENDER EQUALITY	14 LIFE BELOW WATER
6 CLEAN WATER AND SANITATION	15 LIFE ON LAND
7 AFORDABLE AND CLEAN ENERGY	16 PEACE, JUSTICE AND STRONG INSTITUTIONS
8 DECENT WORK AND ECONOMIC GROWTH	17 PARTNERSHIPS FOR THE GOALS
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	SUSTAINABLE DEVELOPMENT GOALS

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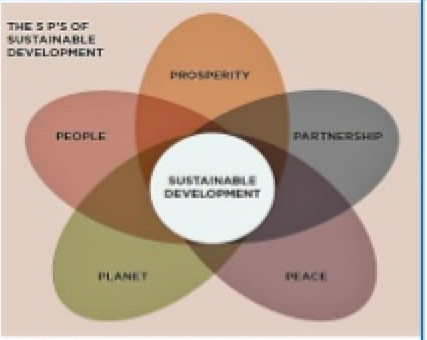
aivp The worldwide network of port cities

AIVP Agenda 2030



01 Climate Change Adaptation
Preparing city ports for the consequences of climate change

02 Energy Transition & Circular Economy
Innovative sustainable energy and industry for city port territories

03 Sustainable Mobility
Finding new mobility connecting city and port

04 Renewed Governance
Using innovative governance for sustainable port cities

05 Investing In Human Capital
Human capital for port and social development

06 Port Culture & Identity
Local port Identity as a key asset for sustainable relationship

07 Quality Food For All
City ports are crucial for sustainable food distribution

08 Port City Interface
Port city interface is a resource to mix different programs

09 Health & Life Quality
Having good living conditions a priority for the city port

10 Protecting Biodiversity
City port biodiversity must be preserved and protected

results incorporated in
EU-INEA/H2020 project
>>>

DOCKSTHEFUTURE
defining the concept of "Port of the Future"

Port of the Future Network
www.docksthefuture.com

COREALIS
PIXEL
PortForward

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Port of Antwerp vision 2030-2050
Port Community as a Whole

www.portofantwerp.com/en

Subject	Contribution to Sustainable Development Goals
1. Shipping	3, 8, 9, 13, 14, 16, 17
2. Mobility	1, 3, 8, 9, 13, 17
3. Employment & safety at work	3, 4, 5, 8, 10, 11, 16, 17
4. Economic activity	8, 9, 12, 17
5. Nature & environment	3, 6, 8, 9, 11, 12, 13, 14, 15, 16, 17
6. Energy & climate	7, 13
7. Research & innovation	9, 16, 17
8. Society	3, 4, 8, 9, 11, 16, 17
9. Circular economy	9, 11, 12, 17
10. Safety & security	8, 11, 16, 17

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Port Community as a Whole

www.portofantwerp.com/en

Banks with a combined $100bn shipping portfolio stimulate green change

11 major shipping banks join global framework to integrate ***climate considerations into lending decisions*** in line with **IMO's GHG strategy** to slash **industry's carbon footprint by 50% by 2050**

The 4 Poseidon Principles

POSEIDON PRINCIPLES

www.poseidonprinciples.org

Assessment of climate alignment

Measure carbon intensity of their shipping portfolios on an annual basis and assess their climate alignment relative to established decarbonization trajectories.

Accountability

Recognize societies' classification role in providing unbiased information, based on mandatory regulation established by IMO for collecting data on ships fuel consumption

Enforcement

Commit to contractual compliance with the Poseidon Principles in their new business activities, using standardized covenant clauses and collaborate with clients and partners

Transparency

Report portfolio alignment score annually, published by the Secretariat of the Poseidon Principles.

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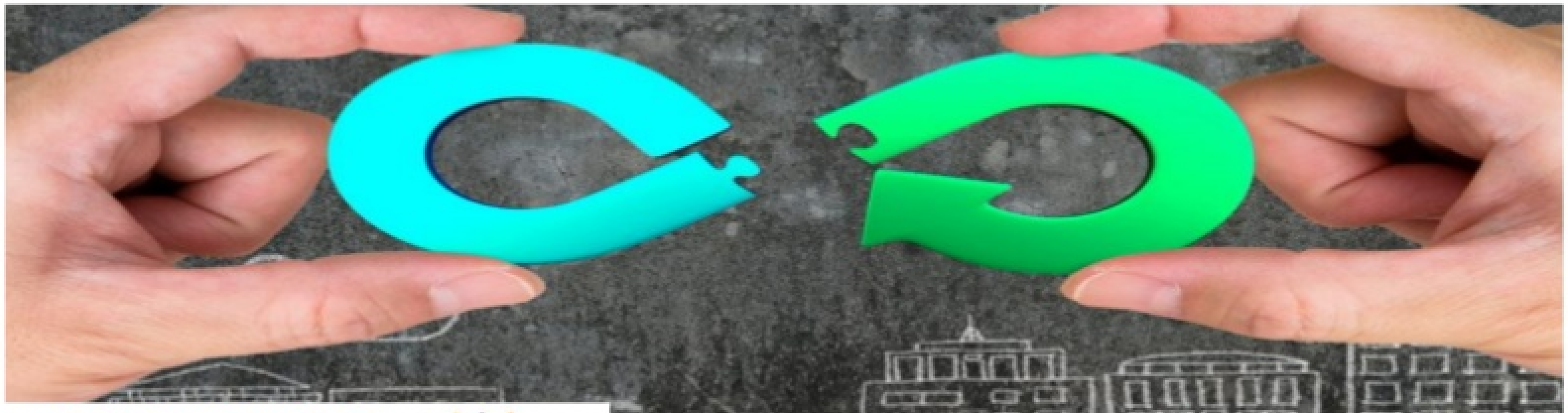
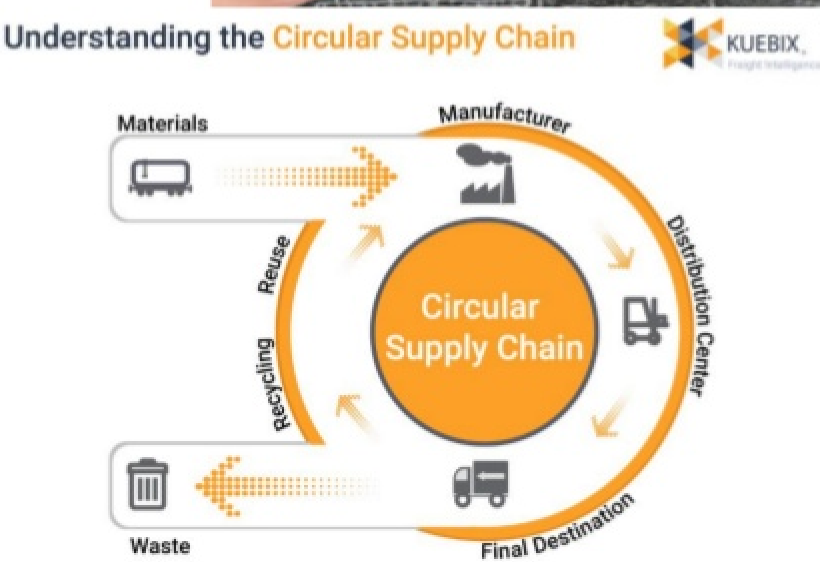
Circular Supply Chains will replace **Linear Supply Chains in the 2020's**





- Save Money and Grow Business Value
- Societal Benefits of the Circular Economy
- Recycling and Reusing protects against price volatility

Circular Supply Chains help companies **meet Regulation Standards**

"One man's trash is another man's treasure"

Circular Supply Chain is the Future

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Q&A

the future is now!

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