UfM Regional Stakeholder Conference on Blue Economy

Is this the beginning of the LNG and Electrification Era in Ships and Ports? What are we, as Mediterranean Countries, doing about it?

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KPMG Project Leader

ECOMASYN
Green technologies & retrofits in Greece

Union for the Mediterranean
Union pour la Méditerranée
الإتحاد من أجل المتوسط

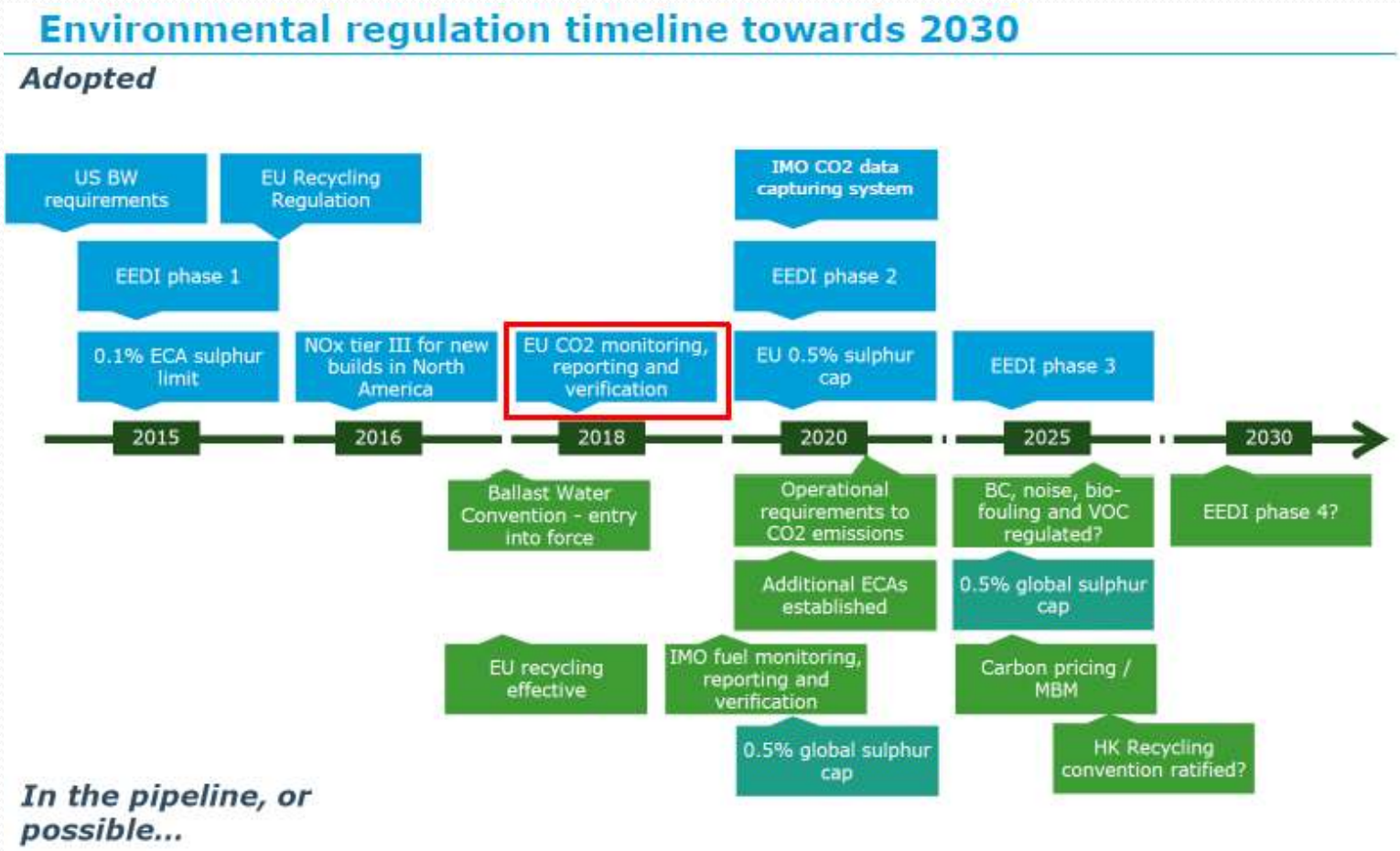
Some facts about the area …


GLOBAL SHIPPING ROUTES
NORTH AMERICA
EUROPE
ASIA
AFRICA
Pacific Ocean
SOUTH AMERICA
Atlantic Ocean
Indian Ocean
AUSTRALIA
NUMBER OF JOURNEYS
>5,000
2,000
1,000
500
200
100
50
20
<10


New ECA?
ECA
ECA
ECA
New ECA?
New ECA?
New ECA?
New ECA?
New ECA?
Existing
Possible future ECA


LNG
HYBRID
HYBRID
10
CO2
LPG
LNG LPG
BATTERY
EEDI
15
NOx
LNG

Environmental regulation timeline towards 2030



The IMO Ballast Water Management Convention

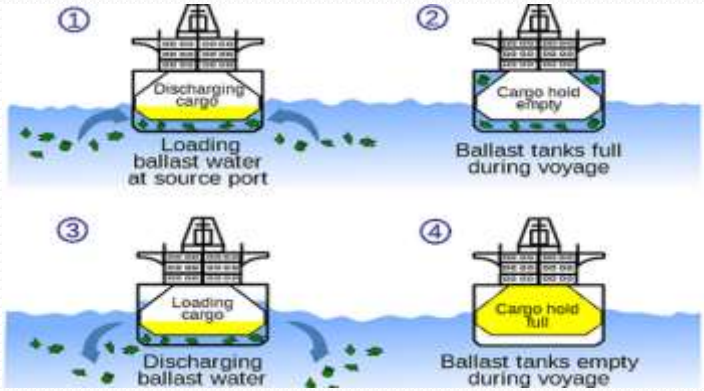
- Adoption: 2004
- Ratification: 8/9/2016
- Entry into force: 8/9/2017

Purpose

Control the transfer of harmful aquatic organisms and pathogens through ships' ballast water and sediments

Application

To all ships, with some minor exemptions (warships, etc.)




READ ALL ABOUT IT !!
NEWS
Image Source: marketingpilgrim.com

Skangas,Titan LNG ink on LNG supply

Credit: Skangas

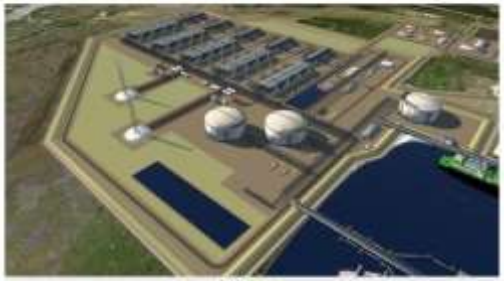
Norwegian Skangas and The Netherlands-based Titan LNG have signed a Memorandum of Understanding (MoU) on LNG cooperation, with the aim to contribute to the overall availability as well as the optimization of LNG deliveries in the wider region.

Astomos, KPC to further study LPG bunkering

Japanese Astomos Energy Corporation and Kuwait Petroleum Corporation (KPC) have agreed to conclude a Memorandum of Understanding (MOU) for further study in LPG bunkering.

LPG bunkering concept was shaped as one of the solutions for the approaching SOx regulation for shipping fuels in 2020 set by the International Maritime Organization.

Bechtel, Tellurian sign agreement for Driftwood LNG project



Credit: Tellurian

Engineering company Bechtel announced it has signed four deals, of $15.2 billion total worth, regarding the engineering, procurement and construction (EPC) of the Driftwood LNG project, near Lake Charles, Louisiana, with US-based Tellurian.

Containerships launch first LNG-fuelled container vessel

Credit: Containerships

The Finnish shipping company, Containerships, announced they have launched their first LNG-fuelled container vessel, 'M/S Containerships Nord' at Wenchong Shipyard, on November 4th.

Shell to fuel North America's first LNG-powered cruise ships

Above image is used for illustration purposes only

Carnival Cruise Line, a unit of Carnival Corporation & plc, announced the signing of an agreement with Shell, to be the supplier of marine liquefied natural gas (LNG), for its two new LNG-powered ships expected to launch in 2020 and 2022 and to be homeported in North America.

The two ships, expected to be North America's first LNG-powered cruise ships, will be fueled through Shell's LNG Bunker Barge (LBB) – a project announced earlier this week, as part of Shell's strategic plan to develop a global LNG bunkering network.

Rolls-Royce to launch LNG fueled yacht

Credit: Rolls-Royce

Rolls-Royce has revealed a yacht concept designed to exploit hybrid propulsion based on LNG fuel and battery power in the marine leisure market.

Viking Line Cruise:

LNG platform launched in Lithuania

Credit: Klaipedos Nafta

On November 8, six partners – science institutions and businesses – established an LNG platform, aiming to strengthen and develop the LNG market and relevant activities in Lithuania.

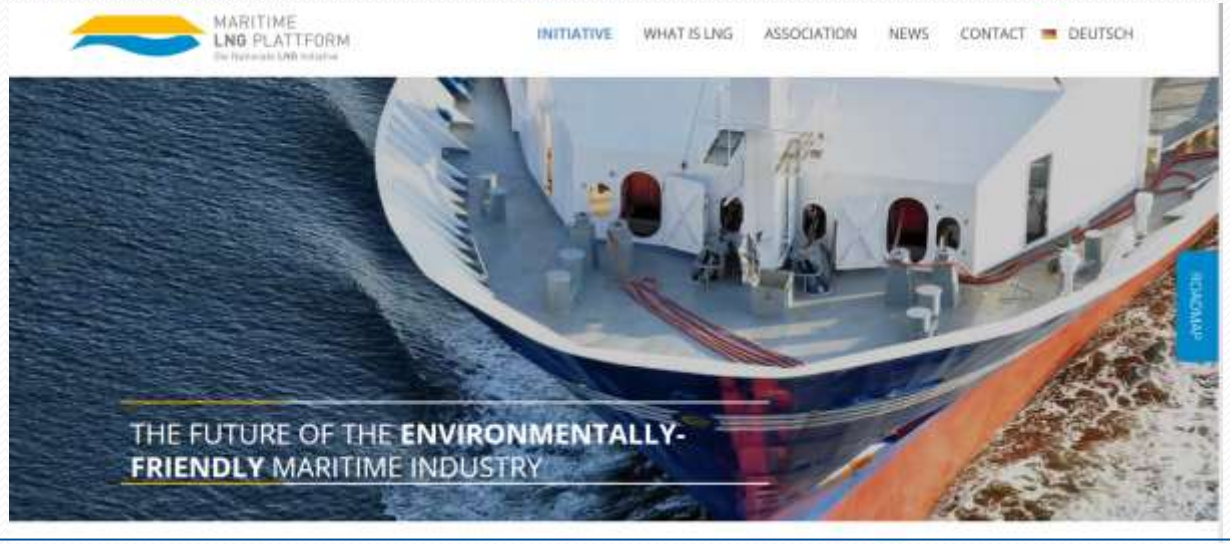


ABB to deliver fuel cell system to Royal Caribbean

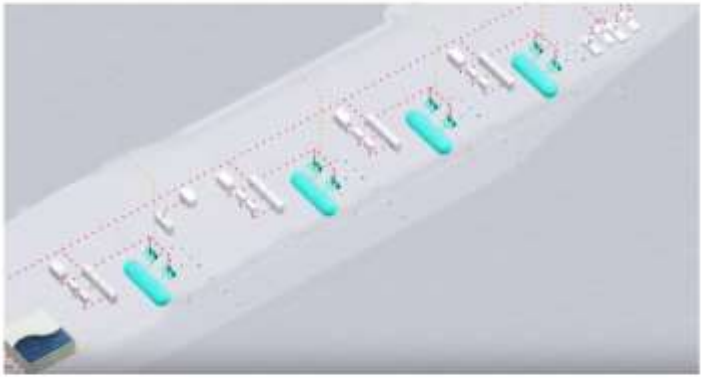


ABB announced that it is going to deliver the first fuel cell system to Royal Caribbean. The system will be used on board a Royal Caribbean International vessel and will be the first fuel cell system to provide an energy source for a cruise ship.

ESPO welcomes EU's deadline for shipping's CO2 reduction

in Emissions, Focus 17 November 2017

Above image is used for illustration purposes only

Earlier in November, the European Parliament and the Council reached an agreement regarding the shipping CO2 emissions to align any EU action with the IMO timeline. Many industry bodies have welcomed this decision so far. Recently,ESPO issued a statement to show its support.

Denmark, China sign on ballast water treatment

in Ballast, Focus · 13 October 2017

Klaus Rostell, International Manager at Danske Maritime, signs the first deal with China on ballast water with Director of SICC, Mr. Yanqing Li / Credit: Danish Maritime

Danish Maritime and the Shipbuilding Information Centre of China (SICC) have signed an MoU in September in Qingdao, China, to collaborate on ballast treatment development which will lead to wider links between the countries' maritime technology sectors.

Shore power at the Port of Los Angeles

Ladies and Gentlemen of the Mediterranean….

We are under Siege !!

What have we done so far?

gastrade

THE COMPANY ▾ ALEXANDROUPOLIS LNGS ▾ NATURAL GAS ▾ SOCIETY & ENVIRONMENT ▾ CONTACT

The floating LNG reception, storage and regasification unit

The floating unit consists of the following main parts:

- Systems for the Side to Side (STS) mooring of the incoming LNG carriers and for LNG offloading
- Four LNG storage tanks with a total capacity of up to 170,000 cubic meters
- Four regasification units, each with a regasification capacity of 400 cubic meters of LNG/hour
- Electricity generators for the power supply of the floating unit
- Metering unit for the measurement of the regasified volumes
- Crew accomodation facilities

ALEXANDROUPOLIS LNGS

- Project location
- The floating LNG reception, storage and regasification unit
- Regasification process
- Permanent offshore installations
- Subsea and onshore pipeline
- Metering and Regulating Station
- Licenses
- Public Consultation
- Legislative framework
- Contribution and benefits

Bulgaria, Greece to build Greek LNG terminal

Image hereabove is used for illustration purposes only

Bulgarian state energy holding company BEH and Greek natural gas company Gastrade announced their partnership to build an offshore LNG terminal in northern Greece.

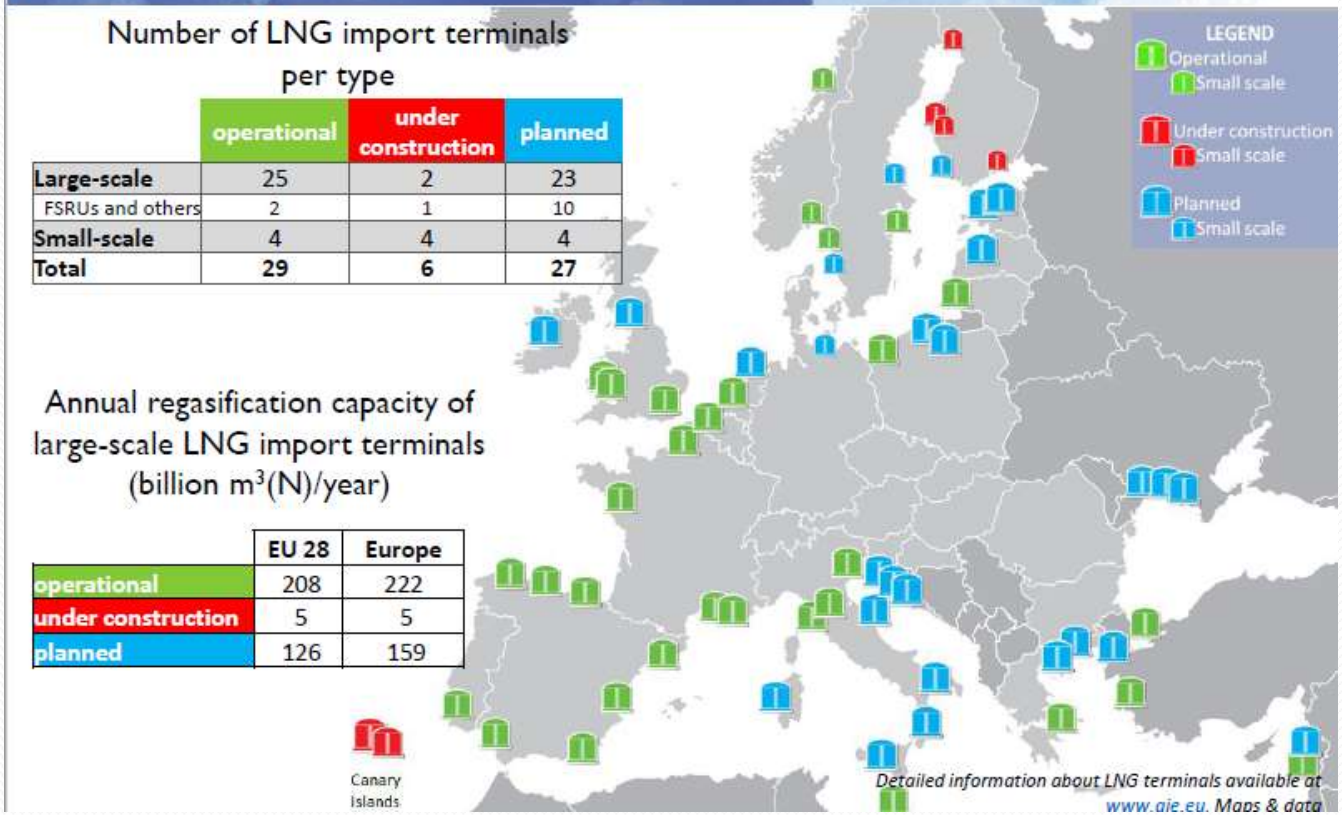
LNG terminals in Europe in 2016

Number of LNG import terminals per type

	operational	under construction	planned
Large-scale	25	2	23
FSRUs and others	2	1	10
Small-scale	4	4	4
Total	**29**	**6**	**27**

Annual regasification capacity of large-scale LNG import terminals (billion m^3(N)/year)

	EU 28	Europe
operational	208	222
under construction	5	5
planned	126	159



ELECTROPNEUMATIC S.A
ELECTRONIC & PNEUMATIC AUTOMATION SYSTEMS

C:A

ARCO LTD
GENERAL SHIP & INDUSTRIAL WORKS

MARITA HELLAS S.A.

franman LIMITED

OCEANKING
TECHNICAL & TRADING SA

DL AUTOMATION PC

nak AUTOMATION

TECHNAVA

GKC
REPAIRS AND MAINTENANCE LTD

SGL ENG LTD
engineering, measurements

P. KOKKINIS LTD

Lloyd's Register

HELLENIC REGISTER OF SHIPPING 1919

INSB

RINA

ECOMASYN Vision

To actively contribute in the next 3-5 years to the creation of a world known Green Marine Center in Greece, which will provide "green" added value to its clients. The strategy to be followed is the «one stop shop» concept, where the customer will have the opportunity to find all services (research, development, advisory, education, certification, project execution, etc.) integrated in one place, selecting from a variety of service providers and products, which will match the required quality/cost/time criteria.

www.ecomasyn.gr

The Project

POSEIDON MED is the first Cross European Border project which aims to introduce LNG as the main fuel for the shipping industry and develop a sufficient infrastructure network of bunkering value chain. It focuses in the eastern Mediterranean region with five Member States (Cyprus, Greece, Italy, Croatia and Slovenia) involved.

POSEIDON MED as a Global Project aims at storing the shipping waters in Greece and has been received enthusiastically by the shipping community, the local society, as well as the political administration.

The lessons learned from the ECA zone depict the necessity of aiming to a system with the simultaneous development of critical supply and demand side installations.

This will achieve economies of scale, will break the "chicken and egg" problem and avoid the formulation of "missing links" in the LNG as fuel supply chain. This capital-intensive project as described here has been included in the list of candidate projects of the newly released Juncker Plan/ European Fund for Strategic Investments (EFSF).

Additionally the project is compatible with the Hellenic Transport Strategic Investment Plan (HTSIP) 2014-2025. The HTSIP foresees the development of all critical infrastructure in the Greek Core ports, the development of the hub and spoke port system and the upgrade of existing terminals. There are two main pillars for a successful and sustainable bunkering system: a) The development of the critical mass of supply points and, b) The retrofit or the building of an adequate number of vessels, an activity that will instigate the demand for LNG as fuel.

Activities during the first phase of the project include the development of the appropriate regulatory framework, planning of an integrated supply chain, technical and financial feasibility for six lead-ships and a sustainable financial model.

The second phase will aim to mature and detail further required actions with enhanced technical studies covering ships, ports and bunkering operations.

The **elemed** project

3 Member States – 3 Core and 1 Comprehensive Port

- Piraeus, Killini(Greece)
- Lemesos (Cyprus)
- Koper (Slovenia)

Cross-european maritime network and **macro-regional strategies** for Adriatic-Ionian Seas

First Cohesion Fund project in Motorways of the Seas, co-funding rate approximately 70%

elemed

The Consortium

- Hellenic Lloyd's SA
- National Technical University of Athens
- Piraeus Port Authority
- Killini Port Authority
- Cyprus Ports Authority
- Port of Luka Koper
- Hydrus Engineering Ltd
- Spanopoulos Group
- Protasis SA
- Hellenic Centre for Marine Research

elemed

But all these….. Are bits and Pieces

And what shall we do?

- Get a Common Vision of the area. It is not easy, but it is feasible
- Create a Common Strategy to serve our Vision. This Strategy needs to be sustainable
- Identify the Common Strategic Objectives
- Create Growth and Prosperity through the implementation of the Common Strategic Plan (new jobs, new infrastructure). There is plenty of work and profit for all

Some Hints on Strategy .....

How ports adapt to the ships ...

Activities

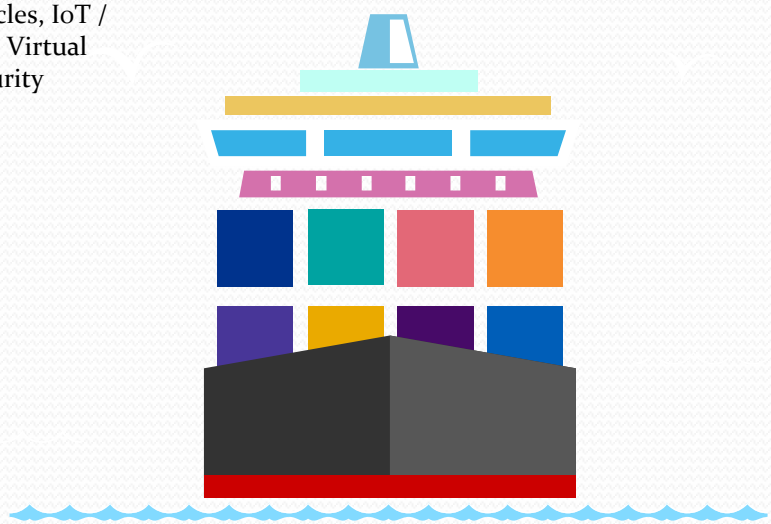
- Numerous port and infrastructure developments worldwide
- Ports become autonomous utilities
- Digitization and automation (Seaside / landside)
- Future Key Innovations: Robotics / Automation, Autonomous Vehicles, IoT / Big Data Analytics, Simulation / Virtual Reality/ Advanced Internet Security

Effects

- Growing price and capacity pressure for the ports
- Digitized process control
- Best possible combination man-machine
- Transparent Supply Chain (Blockchain)

Problems

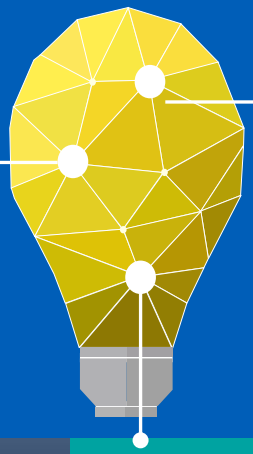
- Limited expansion options
- Energy supply: increasing automation leads to a significant increase in energy demand
- Cyber security



Offshore ports as a future solution?

Developments speak for the idea of offshore ports

- Rising sea level
- Lack of space on land
- Specialization is not always possible



Possible scenario: combination of existing structures (ports on land) with new structures (offshore ports)

- Offshore ports could take on the function of a hub: containers are transferred from large ships to smaller ones, which then drive to the respective ports on land
- No substitution of existing ports on land
- Even smaller ports on land can be controlled easily with smaller vessels and remain competitive

Offshore solutions could be more profitable than upgrading and extending old ports

Future scenario offshore port

Create conditions

- Digitization, almost autonomously operated ports
- Robot use replaces human work
- Remote control of certain processes from land (for example with the help of VR glasses)
- Port is adapted to the requirements of autonomous ships
- Mesh Network - IoT: ships communicate with each other and with port

Master challenges

- Renewable Energy Operation: Offshore Wind Farms, Ocean Thermal Energy Conversion, Floating Solar Modules
- Direct connection of charging stations, e.g. for AGV, at offshore wind farms or similar
- Offshore ports provide an optimal solution to save costs and CO_2

Thank you very much for your attention
Ευχαριστώ πολύ για την προσοχή σας

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