

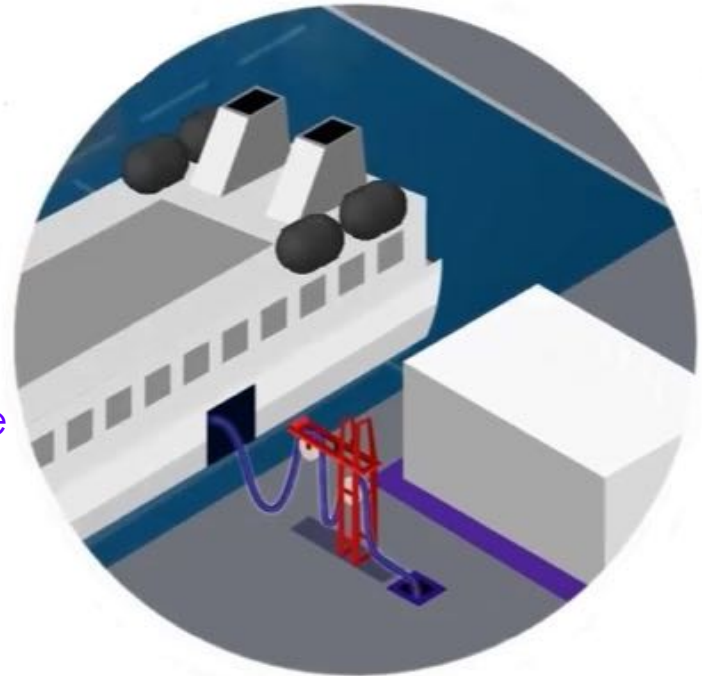
The case of Elemed action

Panos Mitrou

Technology & Innovation Manager,
Marine & Offshore, Lloyd's Register, South Europe

Grand Conference

27 February 2018, SNFCC – Athens, GR



A new era of climate-friendly economic transformation



Maroš Šefčovič

Vice-President responsible for the Energy Union

"A modern sustainable European economy with cleaner air in our cities and better integration of renewables into present and future energy systems."



Violeta Bulc

EU Commissioner for Transport

"The Commission is taking unprecedented action in response to an ever growing challenge: reconciling the mobility needs of Europeans with the protection of their health and our planet."

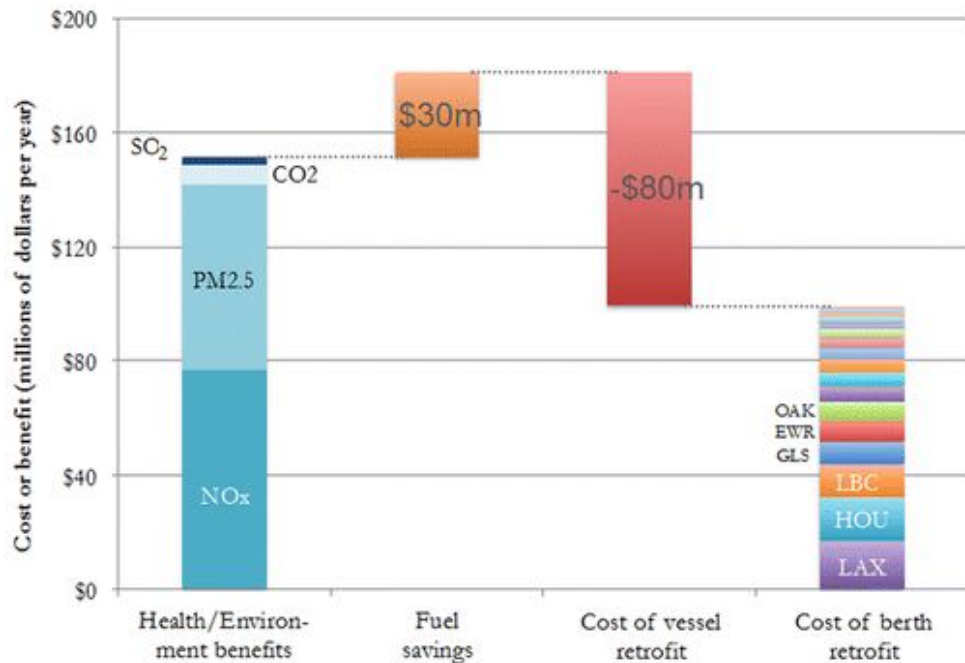
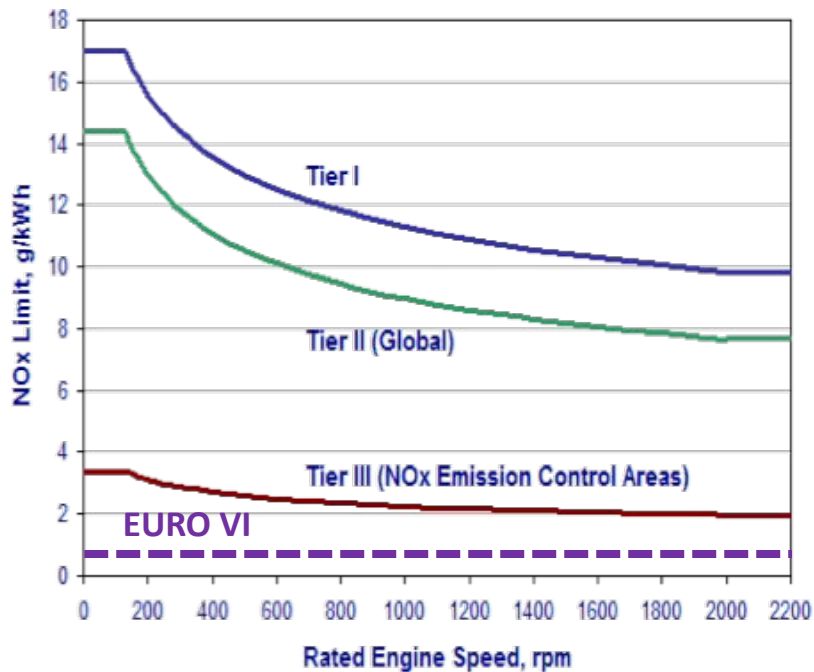


Arias Cañete

EU Commissioner Climate Action and Energy

"Today, we are investing in Europe and cracking down on pollution to meet our Paris Agreement pledge to cut our emissions."

Local pollution – The Lethal emissions

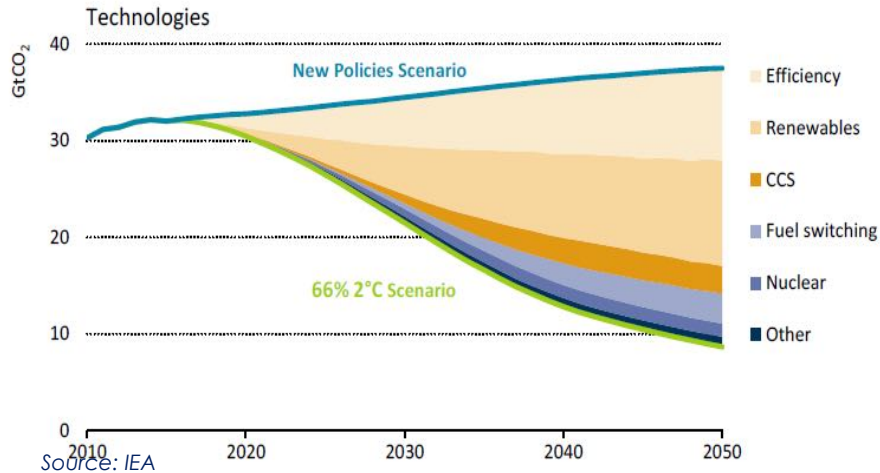


Co-financed by the European Union
Connecting Europe Facility

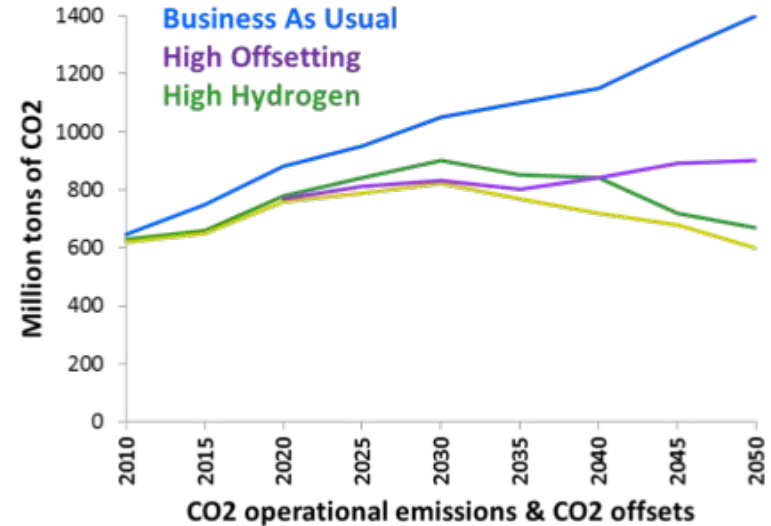


Decarbonisation – The mother of Challenges

IEA Carbon Dioxide emissions under NPS and 66%2degC



LR Carbon Pathways – Shipping GHG Emissions Scenarios



X Factor – The Carbon premium

Regulatory Drivers

2003/96/EC

Tax exemption for energy products supplied for use as fuel for the purposes of navigation within Community waters

2005/33/EC

All vessels outside of an ECA must use fuel <0.5%S as of 2020

2006/339/EU

Membership countries to promote **shoreside electricity** facilities.

elemed

2014/94/EC

Installation of **shore power** facilities in ports of the TEN-T corridor by 2025

2015/757/EU

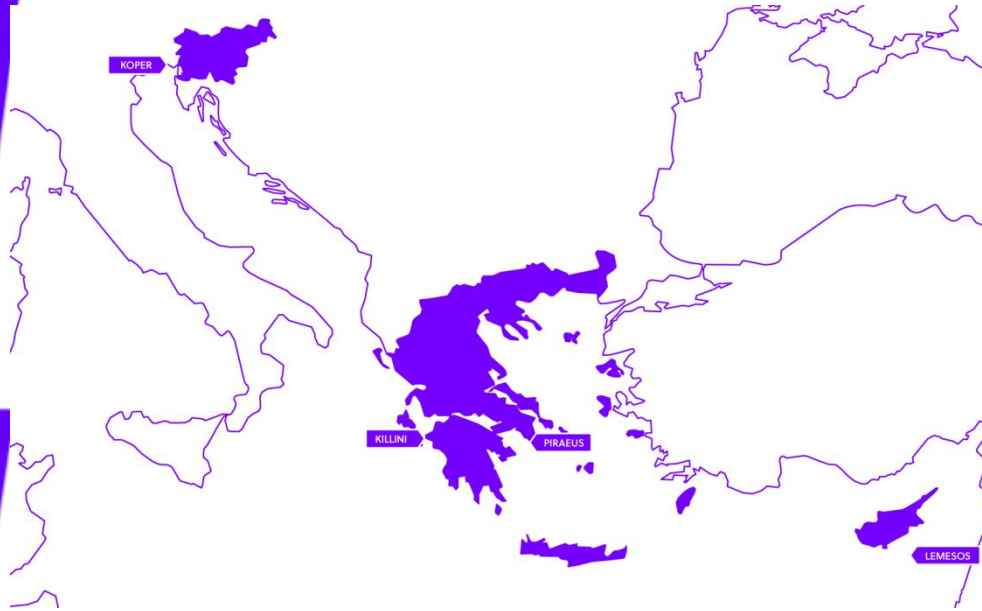
Monitoring, reporting and verification of carbon dioxide emissions from maritime transport

IEC Standards

Shore power & Energy Storage



Elemed Project Anatomy



3 Member States – Participating Ports:

- 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 Sea*,

The Consortium



Big Supporter



Project Highlights



- Front End Engineering Design for **Piraeus, Limassol & Koper**
- Detailed Design for the Port of **Killini** and 1 Ro-Pax Vessel



- Risk Assessment studies for cold ironing and hybrid ships
- Shipyard Preparedness assessment




- Regulatory Analysis and Proposal for Port & Ship Electrification
- Operation, Safety and Training Requirements

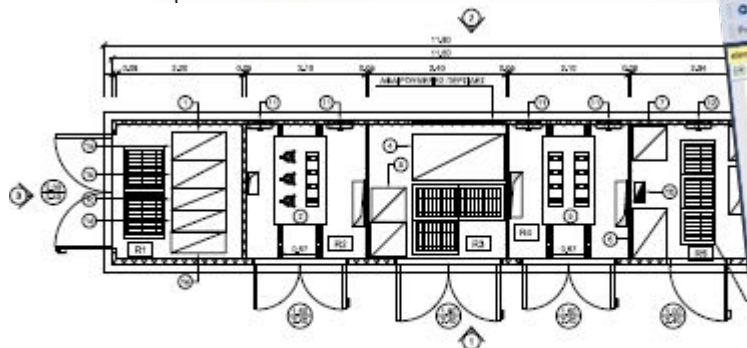


- Techno-economic assessment tool for hybrid solutions
- Reports on port emissions, renewable integration and smart grid deployment

Project Highlights

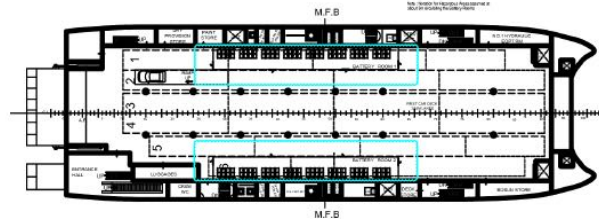
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	ΕΡΓΟ: ΧΡΗΜΑΤΟΔΟΤΗΣΗ:	1. Ευρωπαϊκό Πρόγραμμα «ΔΙΕΥΡΩΠΑΪΚΑ ΔΙΚΤΥΑ ΜΕΤΑΦΟΡΩΝ/ΜΗΧΑΝΙΣΜΟΣ «ΣΥΝΔΕΟΝΤΑΣ ΤΗΝ ΕΥΡΩΠΗ» (TENT - T/ CONNECTING EUROPE FACILITY) MOTORWAYS OF THE SEAS - ΑΡΙΘ. ΕΡΓΟΥ : 2016 - EU-TM-0236- ΣΙΑΡ : 196.168,00 €, 2. ΔΑΤ ΚΥΛΛΗΝΗΣ : 370.344,00 €
ΥΠΑΡΧΟΥΣΑ 2017 :	ΠΙΣΤΩΣΗ 227.832,00 €	

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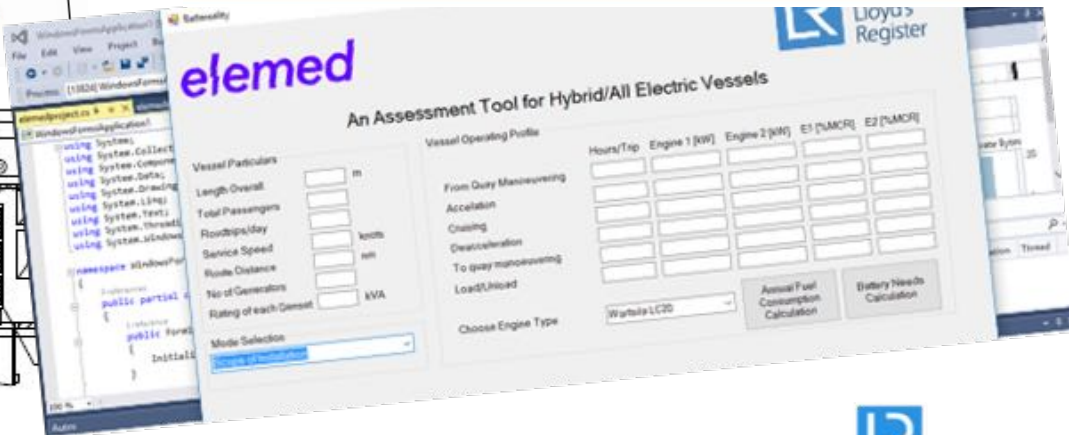


Terms of Reference: Hybrid Ship Risk Assessment
 Hydrus Engineering Hybrid Ship Preliminary Design Concept
 Version 0.2, February 2018

26 February 2018

Rev0.0

Elemed Project



A modern Regulatory framework for electrification in Ships & Ports

Elemed Proposal:

3 Pillar Proposal: Policy, Financial Incentives, Technical Requirements

Policy recommendations

- Ports supplying electricity for cold-ironing services (Eleftherios Venizelos Model)
- Support of renewable energy integration
- Simplification of permit procedure for installation & use of electric power within ports

National Policy Framework for Alternative Fuels

Integration of Elemed Proposal



Recommendations on Funding/Financing

- Inclusion of electric power in the **marine fuels category** and application special taxation measures
- Design an efficient regulatory environment to ensure sustainable provision of Public Private Partnerships (PPPs), involving local insular communities
- Build an equivalent funding environment attracting investments in hybrid shipping for isolated insular routes

Killini Pilot Installation

Serving the Zakynthos and Kefalonia Islands

Port Installation for 2-4 Shore Connections
Projected

Real life application – crash test for
similar port works

Record time permitting process
conclusion



Pilot installation: 1 berth supplying one Ro-Pax vessel with approx. 500kVA needs during port stay

Prospects and Benefits

A snapshot from Piraeus Terminal

- ! More than 500,000 population in proximity to port
- ! Huge direct benefits from the adaptation of Cold Ironing
- ! 98% Elimination of NOx and PM

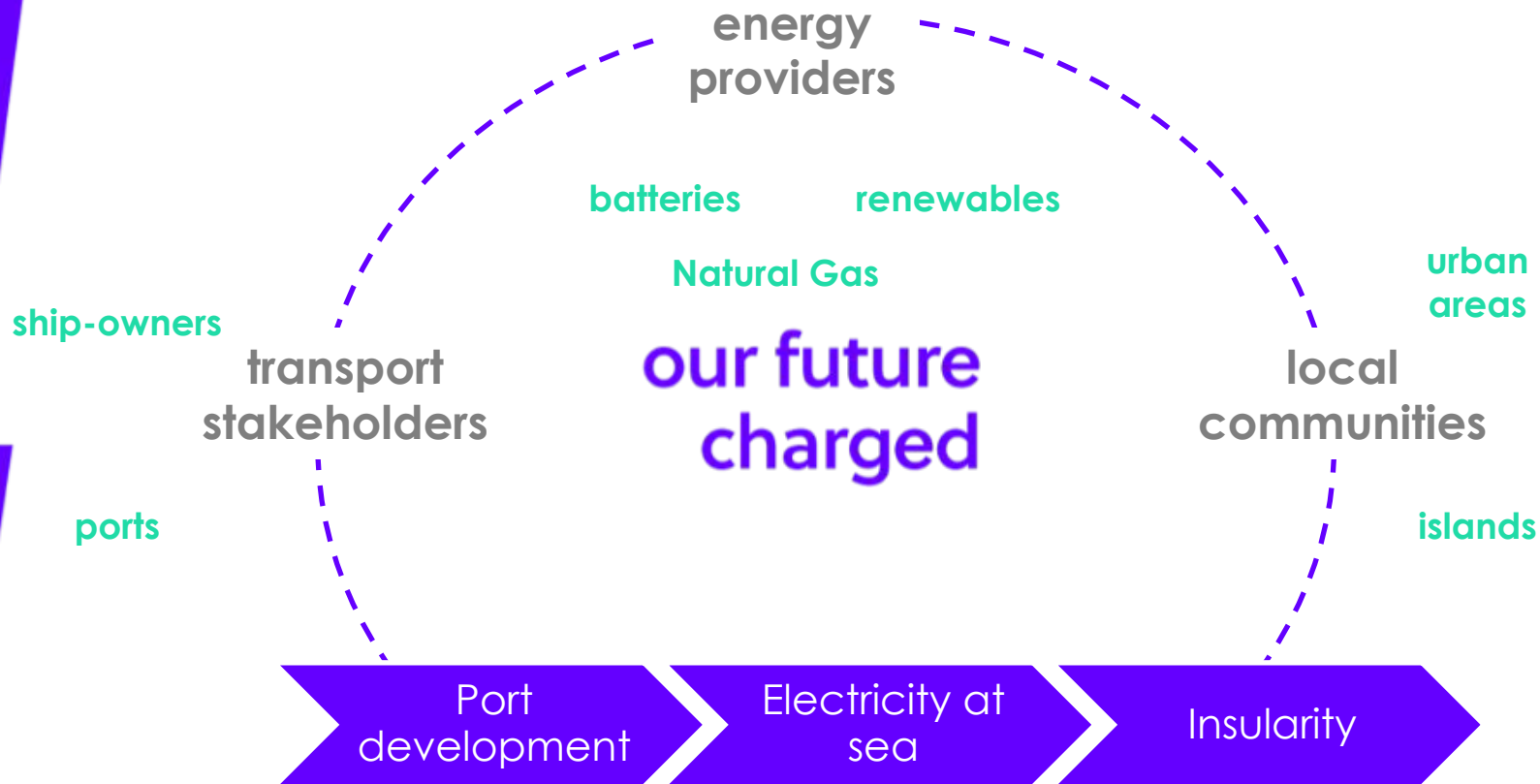


Electro-mobility at sea

- ! Battery Prices are dropping fast & New ultra density ESS will be on the market soon
- ! Estimated Electricity cost for an electric ferry : 1cent/€ per PAX per Nautical Mile
- ! A Radical Technology Uptake Program to follow after 2020



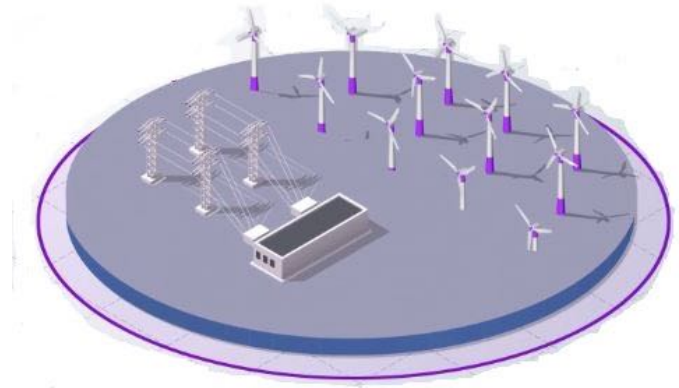
Elemed: building cross-stream synergy



What is next ?

- Exploit existing synergies between transport and energy this is where the prospect lies
- Electrification can be the bridge to renewable energy for our vessels
- Renewable potential and technology advancements will lead to sustainable sea mobility
- This shows the future for our insular communities but also, our shipbuilding sector

“Shipping can make good use of the electricity production by-product in the same manner it has done so far for the oil refinery industry”



elemed

our future
charged

Panayiotis Mitrou

Technology & Innovation Manager,
Marine & Offshore, Business Development
Lloyd's Register, South Europe
E panayiotis.mitrou@lr.org

Thank you



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Co-financed by the European Union
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