Onshore Power Supply; Idealism or Fallacy?

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Background

Onshore Power Supply (Cold Ironing)
- Reduce Emissions
- Reduce Fuel Consumption

- IACS rec.182
- IMO's MSC.1/Circ.1675
- IEC/IEEE 80005 Series

Guidelines
- IEC 2015
- IEEE 2007
- European Alternative Fuels Observatory

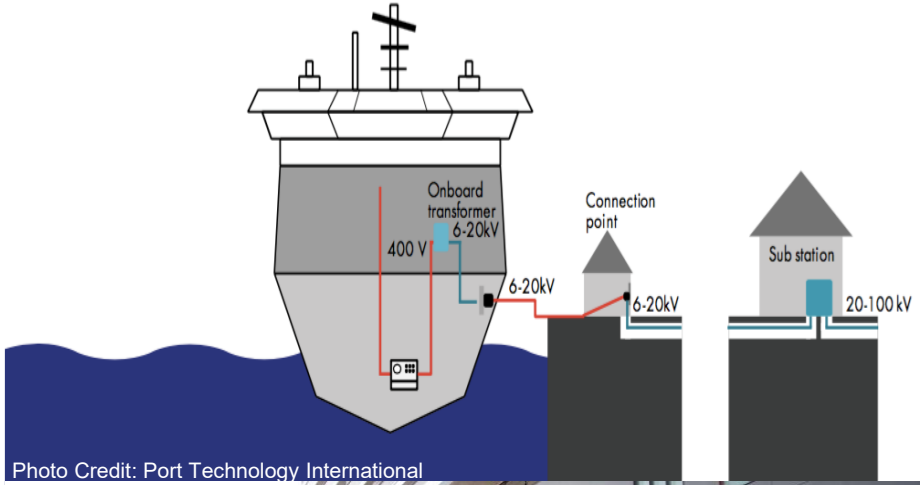


Photo Credit: Port Technology International


Photo Credit: Cody Hooven

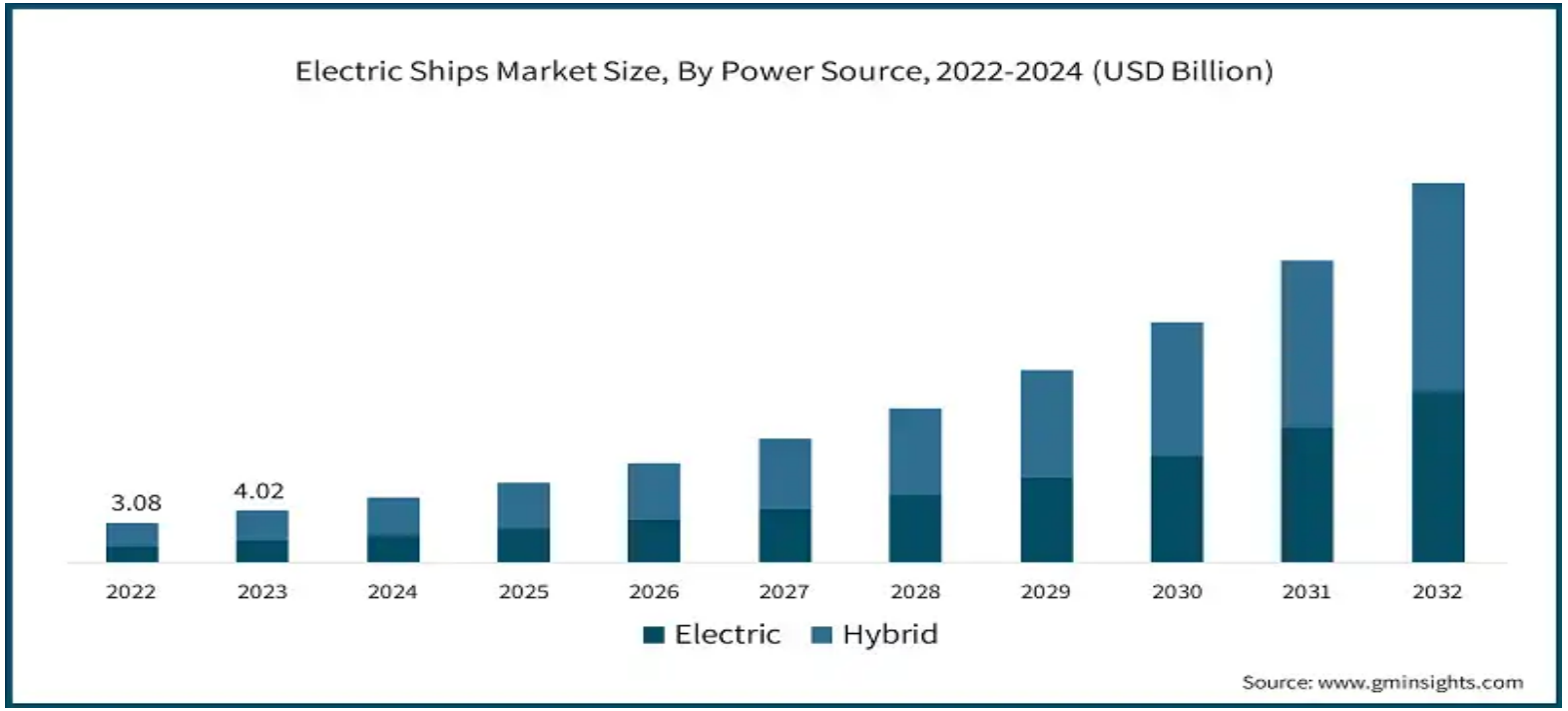
The Ideal Vision

- Zero Emissions in Port
- Self-Sustaining Ports
- Shared Infrastructure
- Ship/ Grid/ Renewable Energy Integration

Reality Check

- Integration Challenges within Port / an Aging Infrastructure
- Limited Funding / Cost of Retrofitting Ports
- Integration into the Grid - Grid Capacity
- Onshore Power - Failure to meet Demand
- Pressure from Regulatory Bodies

Electrification of Ships



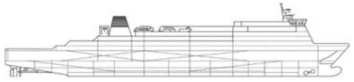
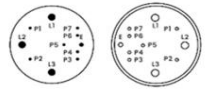
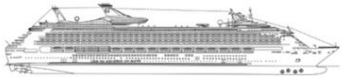
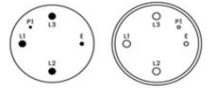
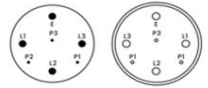
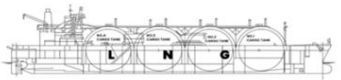
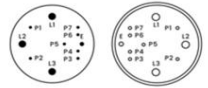
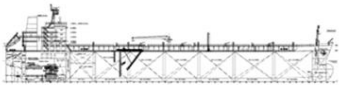
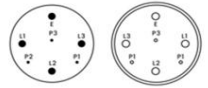
Regulatory Push

- FuelEU Maritime January 2025
- International Maritime Organisations (IMO) Net-Zero Framework (NZF) – Effective April 2025 – 2050
- National Net Zero Mandates
  - UK 2050
  - Scotland 2045
- Ports and Harbours are now having to incorporate formal net-zero strategies to support decarbonisation efforts, mainly via electrification. Electrification is fundamental to these efforts and improving local air quality.

Photo Credit: IMO

Constraints

- Limited generation & space capacity
- Port grid connection limitations
- Capital costs and return of investment
- Policy inconsistency between energy and transport sectors
- Compatibility between existing vessels and OPS infrastructure

High Voltage > 1 MVA	Operability	Dimensions	Plug
 Ro-Ro cargo and Ro-Ro passenger ships	80005-1 **Annex B** Normative	62613-2 **Annex J**	
 Cruise ships	80005-1 **Annex C** Normative	62613-2 **Annex G/H**	
 Container ships	80005-1 **Annex D** Normative	62613-2 **Annex I**	
 LNG carriers	80005-1 **Annex E** Informative	62613-2 **Annex J**	
 Tankers	80005-1 **Annex F** Informative	IEC 62613-2 **Annex I**	
Other	80005-1 Not defined	62613-2 As appropriate	Not defined

Credit: Sustainable-ships.org

Consequences of Inaction

- Increased local emissions
  - Environmental impact – NOx, SOx and CO2 emissions
- Penalties for ship owners
  - Fines or port access restrictions
- Inability to become self-sustainable
- Missed Opportunity for Creating Jobs

Photo Credit: Port Xchange

Electrification in Ports

Preparing for a Sustainable Future

Ports and Harbours are now having to incorporate formal net-zero strategies to support decarbonisation efforts, mainly via electrification. Electrification is fundamental to these efforts and improving local air quality.

The Preparation

- Assessment of existing infrastructure, policies and procedures
- Creating baselines in which to improve upon including emissions and operation efficiency
- Building early stakeholder relationships
- Creating an electrical load forecast to allow for sufficient electrification
- Conducting a feasibility study to identify the solution either through innovation or modification.

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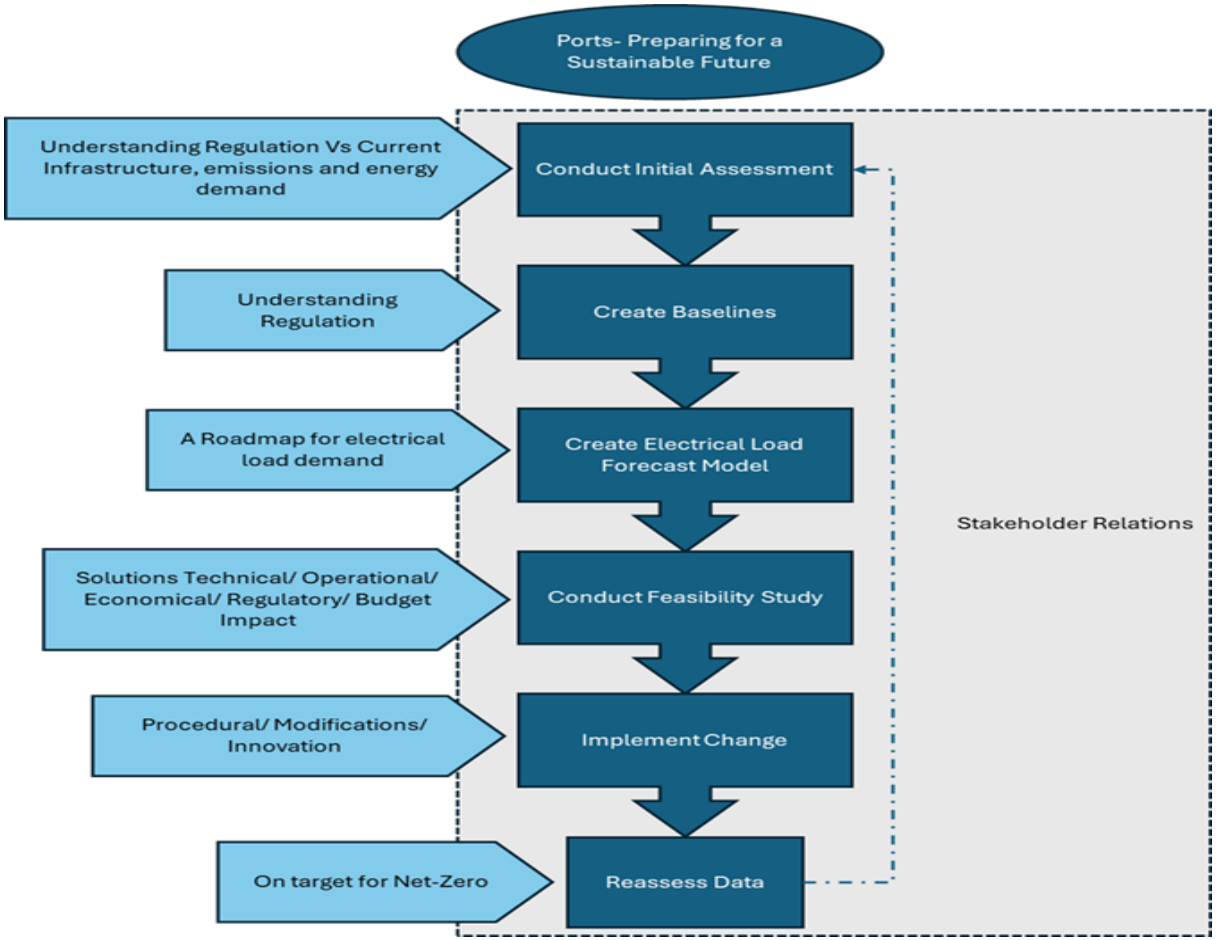
Preparation



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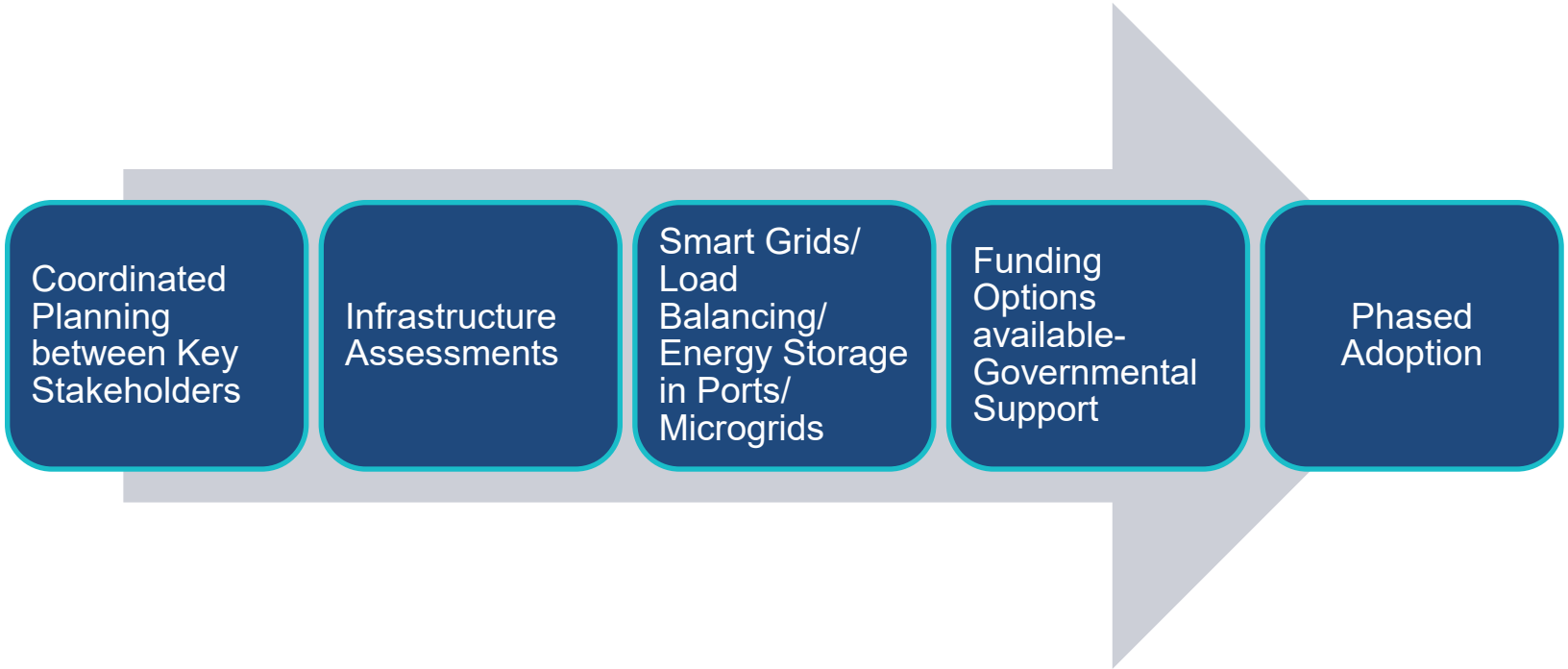
Planning


Coordinated Planning between Key Stakeholders
Infrastructure Assessments
Smart Grids/ Load Balancing/ Energy Storage in Ports/ Microgrids
Funding Options available- Governmental Support
Phased Adoption

Maximising the ‘Green Electron’

- Right Technology/ Right Timing/ Right Policy
- Coordination / Stakeholder Relationships
- Smart Energy Management
- Electrification/ Offshore Wind/ Sustainable Fuel Hub

- **Electrification is KEY**


Photo Credit: Dan Shipping

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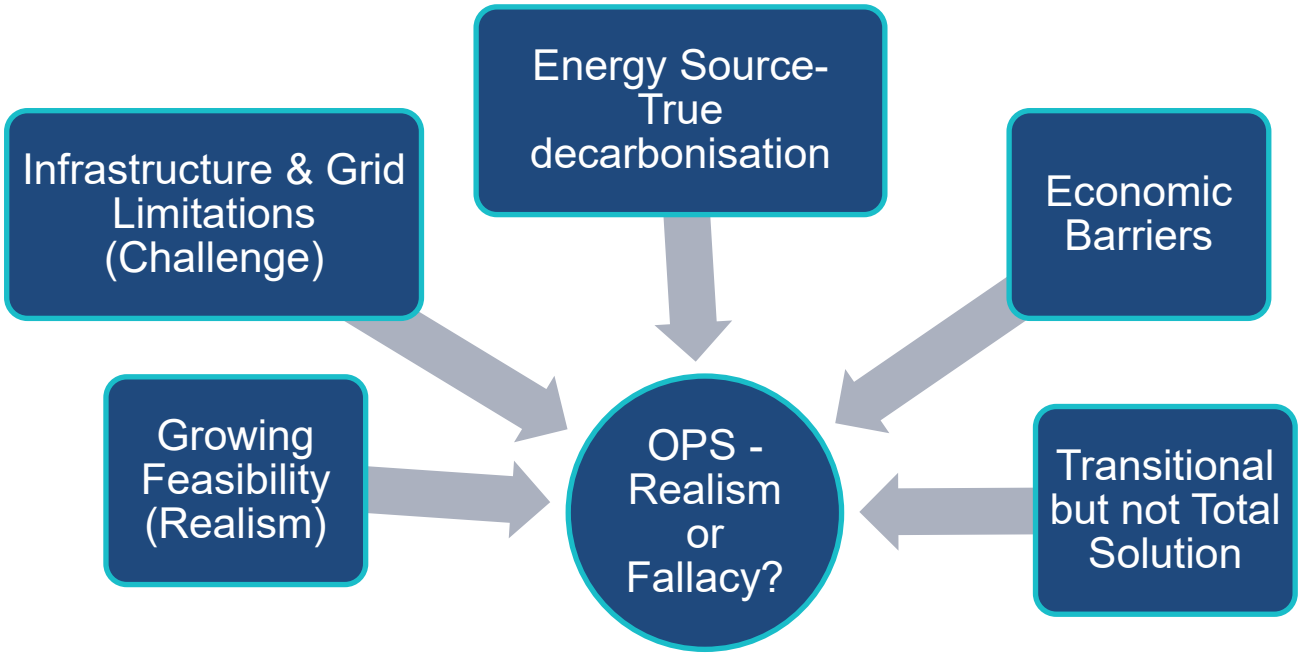
Summary / Conclusion



Thank You, Any Questions?

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INDUSTRY-LEADING TECHNICAL INNOVATION

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